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Telephony

THE JOURNAL OF THE TELEPHONE INDUSTRY

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With extension of dial service, PBX operators play vital part in maintaining nation's efficient telephone service. Here an adviser assists a PBX operator. See page 27 for first part of PBX Service Advisers' Handbook to be published in TELEPHONY.

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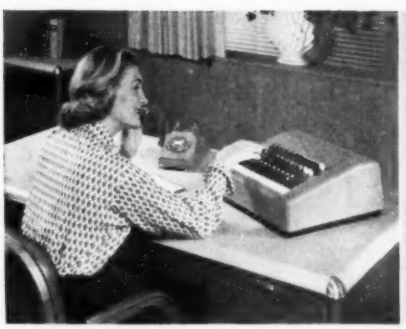

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FLASHES AND PLUGS

CULTIVATING THE GRASS ROOTS. A press release from the office of Sen. Barry Goldwater of Arizona recently announced that he was about to become "the first senator in American history for whom residents of his state could leave a telephone message at any time of the day or night."

The press release went on to say that "a unique automatic telephone answering device" would be installed on one of the telephones in the senator's office. This device, the release said, would answer callers during hours when the office was closed, give them a recorded greeting, and then record their answer.

Old Senate hands expressed doubt that the device would be quite as unusual as the press release said. But noting that it would give constituents an opportunity to give the senator their views at any time of the day or night during weekends, they predicted that some of the messages he would receive might well come under the heading "unique."

•

NOBODY HOME. Seeking to make an appointment with a man, a Milwaukee (Wis.) *Journal* columnist telephoned his home the other day. A woman answered.

"Is Mr. So-and-So there?" he asked.

"No," she answered after a moment's hesitation.

"Is this his residence?" inquired the columnist.

"No," was the reply. "She's gone out, too."

•

NOT WISHING TO LOSE CONTACT. Howard F. Van Zandt, assistant vice president of the International Standard Electric Corp., during a recent visit to Tokyo, Japan, and Hong Kong, picked up a story from a man he described as "an Englishman named Keating, who was an official of the National City Bank and who was interned in one of the Shanghai camps during the war."

As Mr. Van Zandt tells it: "It seems that when the enemy civilians were being rounded up by the Japanese, each civilian was permitted to carry a small amount of personal baggage with him to the camp. Careful planning would have restricted this precious bundle to such things as extra eyeglasses, medicines, clothing, and precious possessions that could be traded for food, if the necessity arose.

"After the camp had been in operation for a while, it was discovered by those in charge that many of the internees had included books in their baggage. So that all might benefit, a camp library was established, made up of these books.

"When the books were registered in, Keating said that, to their amazement, they found that a number of internees had carried with them heavy Manhattan and London telephone directories!"

CIRCULATION

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Telephony

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Since 1901

March 3, 1956

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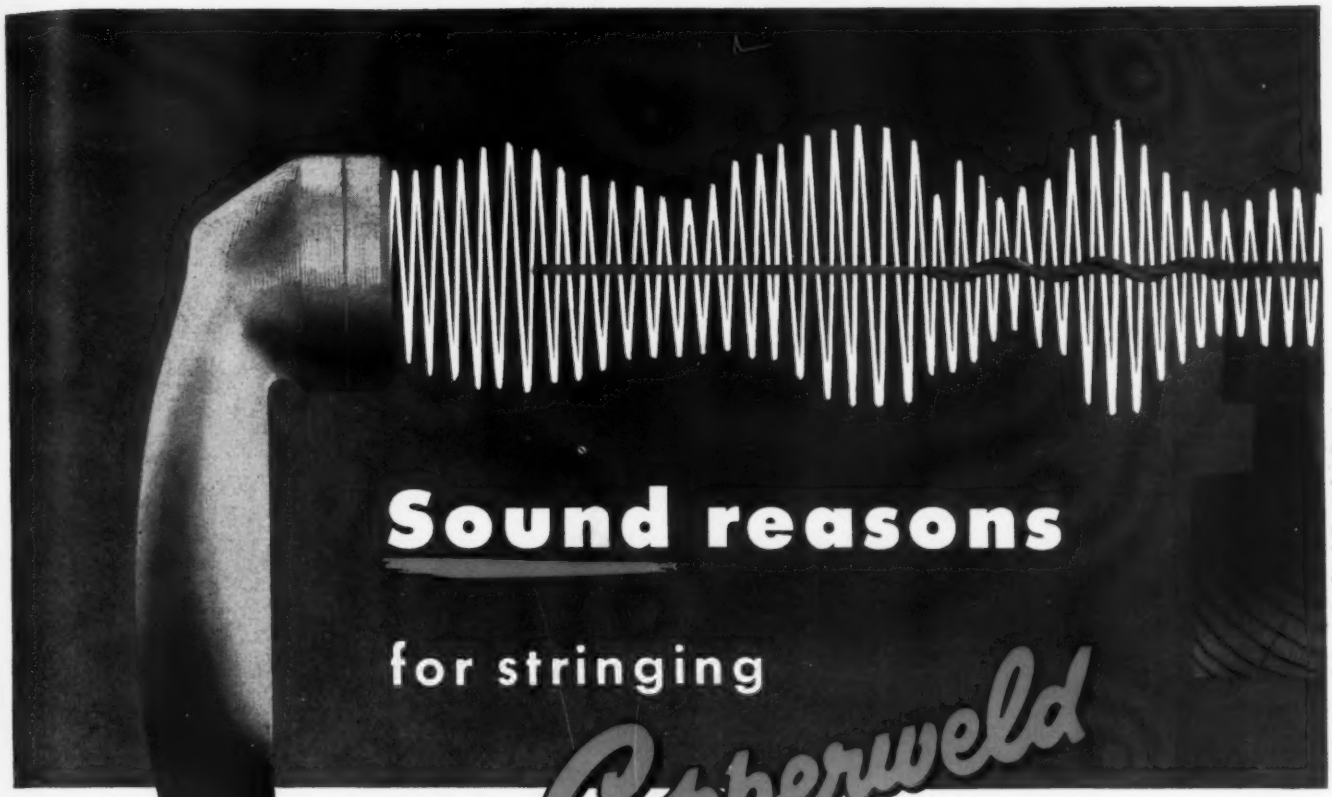

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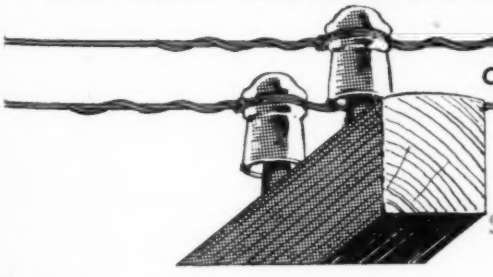

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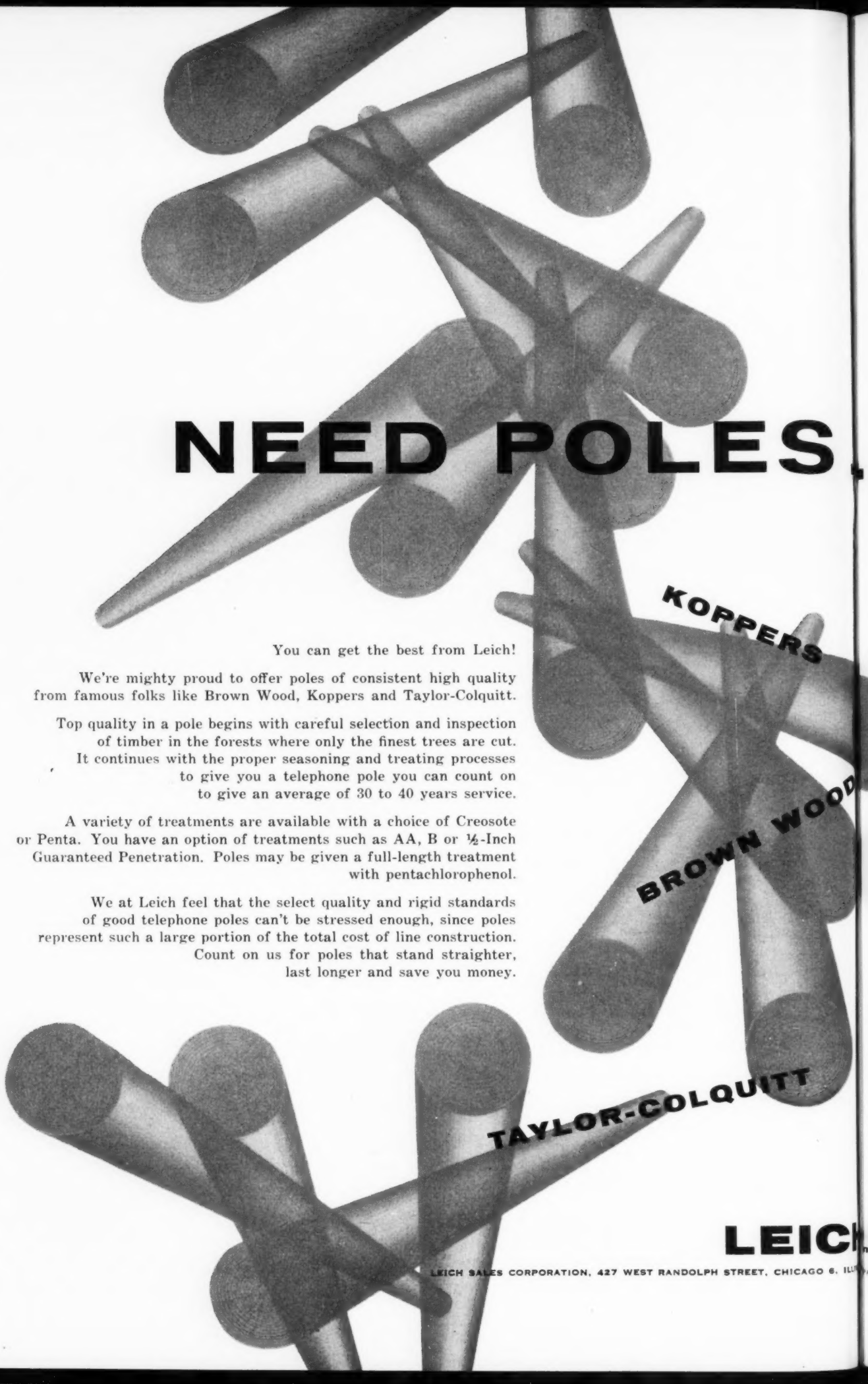

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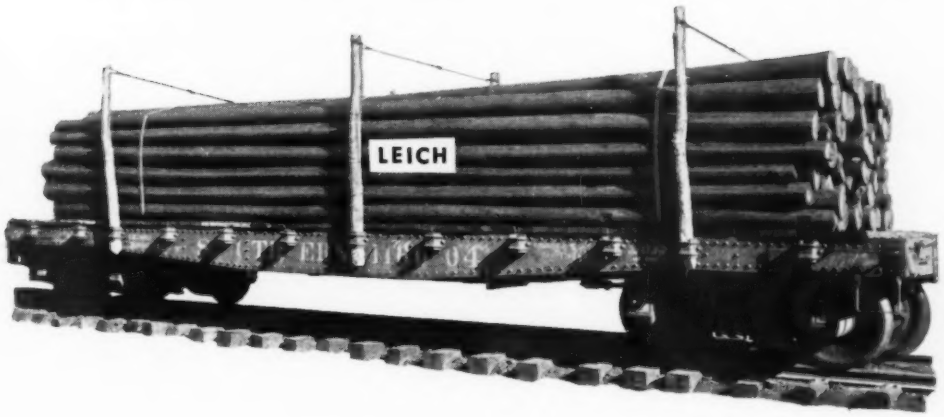

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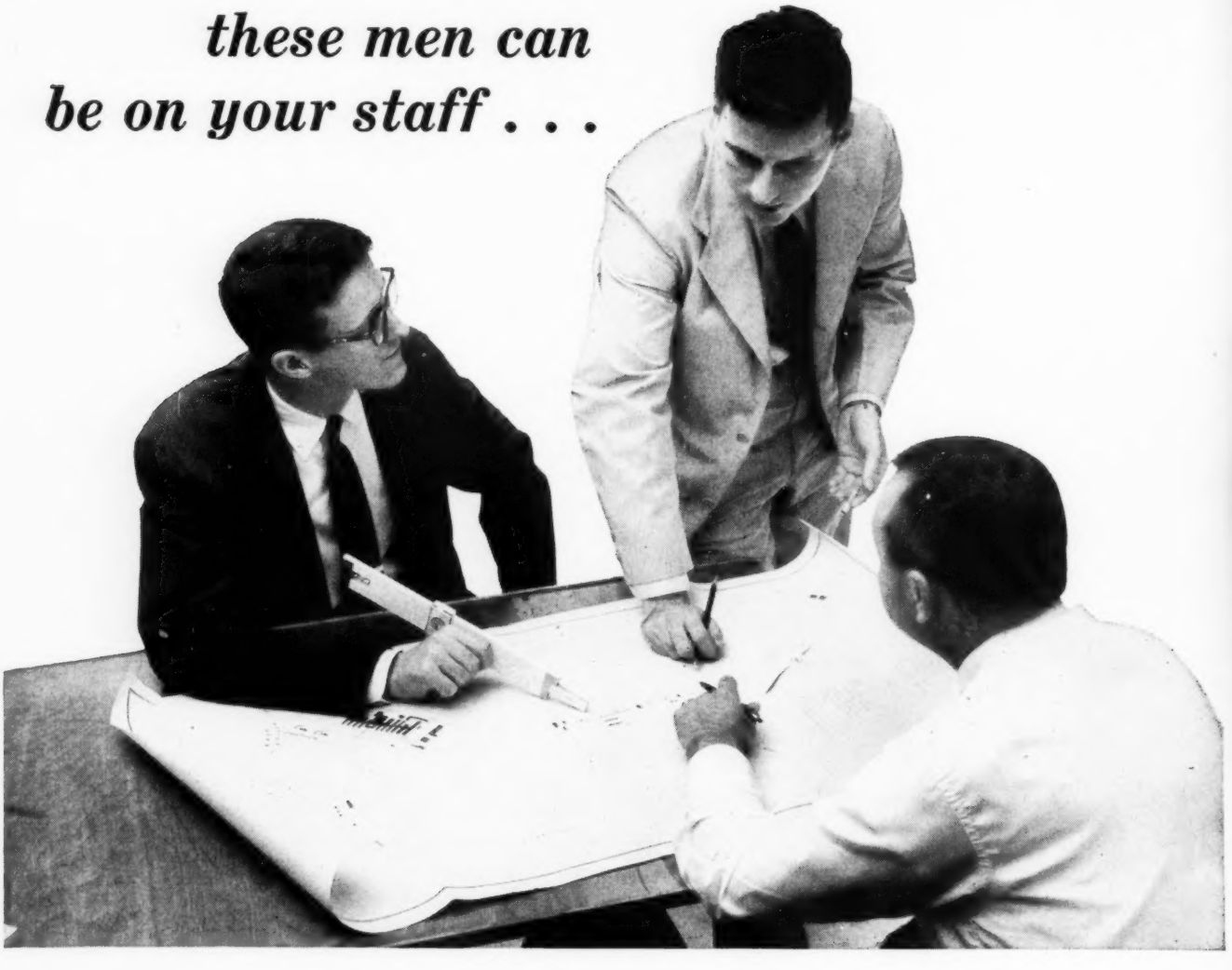

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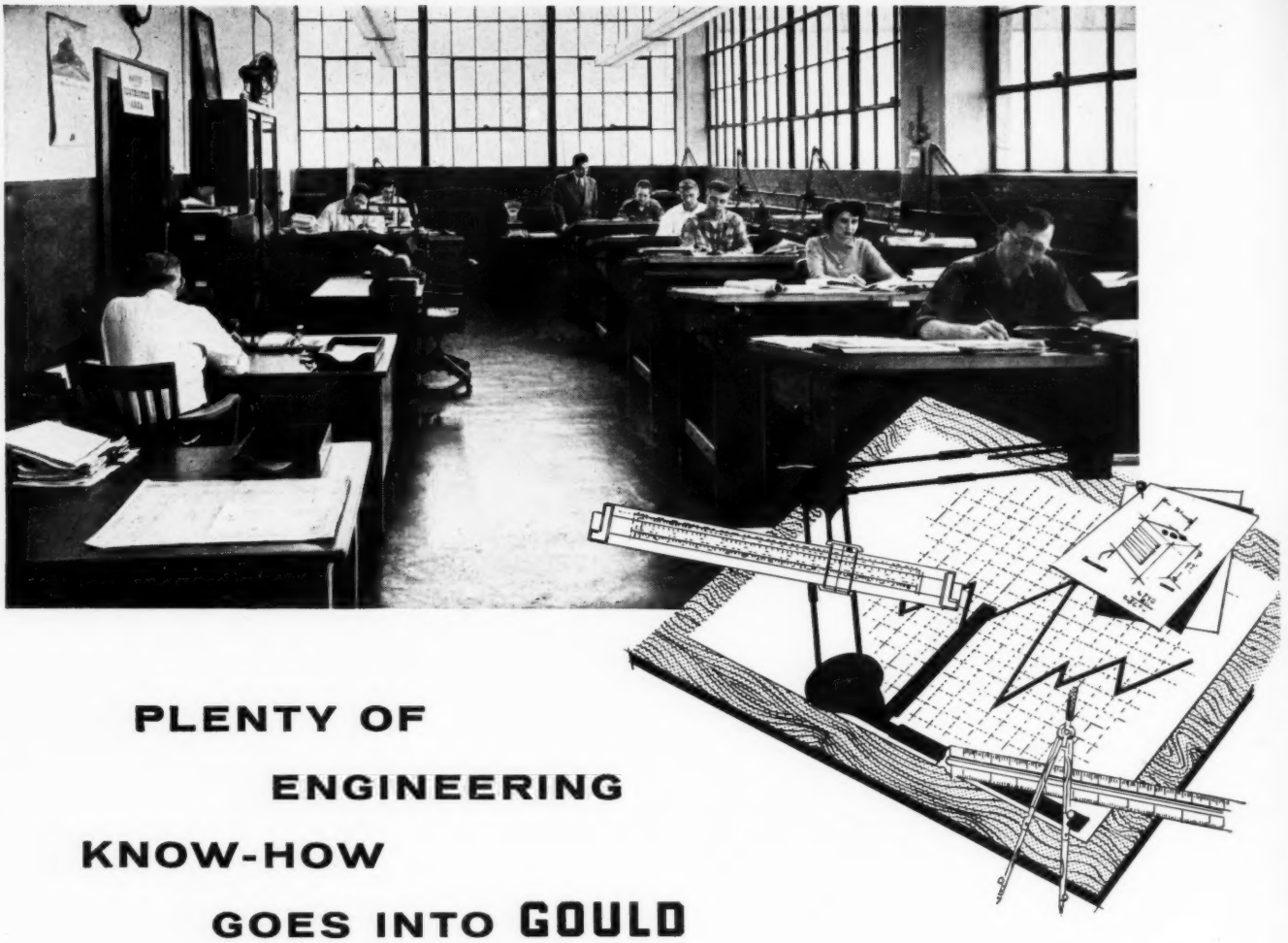

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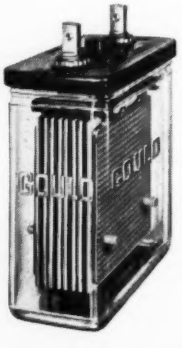

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IN THE NATION'S CAPITAL

BY FRANCIS X. WELCH, WASHINGTON EDITOR

New York court's ruling that reproduction cost must be considered in establishing New York Telephone Co. rate base emphasizes trend away from state adherence to original cost rate-making. State powers in utility strikes analyzed.

THE LONG-AWAITED decision of the New York Court of Appeals has brought forth to the center of the regulatory stage once more the fact that the postwar trend has been away from strict adherence to original cost rate-making. It is a trend born of the postwar inflation which sent prices of everything, including cost of living and the cost of telephone plant and equipment, skyrocketing. It was a trend based on the realization of a growing number of highest state courts that insistence on original cost, regardless of all other measures of value, is simply not realistic during such an inflationary period.

The trend still has a good way to go before even a majority of the state regulatory commissions can be found in the list of states which permit or require their commissions to consider replacement cost, reproduction cost, or other measures of fair value as well as original cost in determining a rate base. Nevertheless the actual change-over during the past few years is impressive when one considers the *importance* of the states which have made the change.

The states with the two largest cities —New York and Illinois—are now to be considered fair value states as far as telephone rate-making is concerned. Indeed, the list of fair value states now ranges in an unbroken line eastward from Illinois through Indiana, Ohio (where statutory reproduction cost prevails), New York, Pennsylvania, to the eastern coastal states of Maryland and Delaware.

Just by way of recapitulation, here is a list of the remaining states where the commissions still practice a rigid and exclusive adherence to original cost rate-making (gauged by the most recently available information derived from statute and decision): Arkansas, California, Connecticut, Florida, Georgia, Idaho, Kansas, Massachusetts, Michigan, Minnesota, Missouri, New Jersey, New Mexico, North Dakota, Oklahoma, Oregon, Rhode Island, South Carolina, Tennessee, Utah, Vermont, Washington, West Virginia, Wisconsin, and Wyoming.

That makes 25 states, although the exact position of some of the commissions placed in the above list may be debatable. In Massachusetts, for example, the commission has, for many years, followed a so-called "prudent investment" rate base policy (which is a liberal variation of the original cost approach). But a 1954 decision of the highest state court, while refusing to disturb the Massachusetts commission's practice, created considerable doubt about the constitutionality of the methods used and indicated that the commission might properly have followed a reproduction cost formula just as well (Re: New England Tel. & Tel. Co. 6 PUR 3d 65,73).

The following is the list of states where the commissions use either the so-called "fair-value" or some other form of a rate base in which the commission is either permitted or required to consider current value or replacement cost: Alabama (lower court), Arizona, Colorado, Illinois, Indiana, Kentucky, Maine, Maryland, Montana, Nevada, New Hampshire, New York, North Carolina, Ohio, and Pennsylvania.

This list adds up to 15. But this list obviously contains the more populated states where a large proportion, dollar-wise, of public utility operations take place.

States not appearing in either list are those where the commission jurisdiction is limited or absent entirely. There is also the somewhat equivocal position of the state of Virginia, where the statute specifies a "present fair value" rate base, but where the commission presently insists on using original cost as a measure of such fair value. The Virginia commission also takes the responsibility of changing the formula on its own initiative, at any time, just as if it were a specialized legislature as far as public utility rates are concerned (Re: Virginia Electric & Power Co. 9 PUR3d 225, 229).

The decision of the New York Court of Appeals is bound to be a landmark case, not only because it swings the nation's largest and more important state from one list to another—for telephone rate-making—but also because it involves probably the most important and largest single rate case in the history of public utility regulation. On Feb. 18, 1956, by a vote of 4 to 1, the court directed the New York Public Service Commission to reopen hearings on the application of the New York Telephone Co. for a $68,850,000 rate increase, and to weigh evidence of replacement cost in doing so.

This decision of the court is a definite setback for the rigid policy followed for many years by the New York commission, not only of adhering to a strict original cost rate base, but even refusing to consider evidence of any other kind. The majority opinion, written by Judge Froessell, holds that the New York statute is "clear and definite" in requiring the commission to weigh replacement cost in setting rates for telephone companies. (Note that the statute construed applies specifically to telephone companies.) The court pointed out that the commission was not limited to determining rates on any particular basis, but that it was required by a statute to consider replacement value.

The New York state court's decision opens up a new chapter in New York

regulation and it is not at all clear what the final effect will be, not only on telephone companies in that state but other public utilities as well. Further appeal to the United States Supreme Court is unlikely, since the case involves a construction of state law and no federal question suitable for further appeal to federal court.

Both Democratic Governor Harriman and Republican State Attorney General Javits have announced that they would seek legislation that would nullify the decision. But that is almost the routine reaction to such a decision, and no such retaliatory legislation has been enacted in recent years by state legislatures. This happened in Maine, Maryland, and Pennsylvania. It has been going on year after year in Ohio. Nothing happens.

The New York Telephone Co. itself has indicated that it will bring an entirely new rate case before the New York commission now that the court has confirmed its right to introduce replacement cost evidence. The position of other New York utilities is less clear, because the statute governing their rates does not specifically spell out any commission duty to consider replacement cost. Associate Justice Dye dissented.

The New York law is complicated by the fact that public utility companies in that state operate under two different statutes, containing two different theories of rate-making. One requires the commission to give due regard to "value of property actually used" by telephone and railroad companies in fixing rates. The other—which applies to all utilities other than telephone and railroad companies—requires the commission to consider "the capital actually expended" in making rates.

Gas and electric utilities operating in New York state may, at some future time, raise a reasonable question as to why their rates should be fixed under one theory of rate base composition, while telephone and railroad company rates should be fixed under another. But that is borrowing tomorrow's problems. As of today, the law of New York seems to be that telephone company rates must be fixed on the basis of the value of property devoted to public service, including consideration of replacement cost.

State Powers and Utility Strikes

The neighboring cities of Baltimore and Washington have two things in common these days — transit trouble. Last August, the Capital Transit Co. ran into such a serious strike that Congress ordered the company to go out of business within a year. The city heads and congressional committees are still scurrying around on that one. Over in Baltimore, the local transit company has been deadlocked in a stubborn strike for nearly a month. The only answer seems to be state seizure and operation, pending arbitration. That is to say, it is the only answer that has been seriously suggested in the Maryland Legislature. There may be other alternatives, but meanwhile the strike goes on.

Not only in these transit strikes, but in other public utility strikes, there is the recurrent panacea of state seizure by state law suggested to break the deadlock and resume public service.

But has the state any right to do this under the federal law (Taft-Hartley) in the case of a major utility walkout? If President Eisenhower's 1954 bill of amendments to the Taft-Hartley Act had prevailed, the right of Maryland, or any other state, to adopt its own orderly utility strike legislation would be a good deal clearer.

Over two years ago, Jan. 11, 1954, President Eisenhower asked for such clarification in a message to Congress. His recommendations followed a thorough study of Taft-Hartley law operations as of that date, both good and bad. Naturally, the President's advisers had examined the 1951 decision of the U. S. Supreme Court, which held unconstitutional key parts of the old Wisconsin law, which forbids strikes in public utility operations.

The ground on which the court's majority decided the Wisconsin Case was that the federal government had preempted the labor relations field by passing the Taft-Hartley Act. It followed that the state legislature retained only the narrowest residual power to legislate on labor matters and specifically that it retained no power at all to outlaw transit and other utility strikes.

But, said President Eisenhower in the amendment message of 1954, "The (Taft-Hartley) act should make clear that the several states and territories, when confronted with emergencies endangering the health or safety of their citizens, are not, through conflict with the federal law, actual or implied, deprived of the right to deal with such emergencies."

Such was an express presidential invitation to the states (when clearly authorized by the proposed amendment) to deal with utility strikes. But the President still retains power to deal with national emergency strikes under Taft-Hartley.

But when is a utility strike a national emergency? Southern Bell Telephone & Telegraph Co.'s strike of last spring involved a number of states. But the President did not invoke the national emergency provision of Taft-Hartley. In fact, the policy of the present administration has been to let management and labor thrash out their own difficulties without overt federal interference along this line. So far this has worked out pretty well. Non-interference by the federal government has a tendency to make the parties to a labor dispute bargain realistically and independently, on their own responsibility, and without depending on one-sided intervention.

On the other hand, back in 1944, the Fourth U. S. Circuit Court of Appeals, in a case involving the Baltimore Transit Co. found that such operations affected interstate commerce so as to bring an essentially local transit company under the federal jurisdiction of the old Wagner Act. The court pointed out that Baltimore was the seventh city of the United States in size and that its industry was engaged in production of goods and transportation of goods in interstate commerce. The court then held that a tie-up of Baltimore's transit system would paralyze the city and jeopardize the public interest. That was back in 1944. At the present time the strike has been going on for a month. While the city is very uncomfortable and exasperated, the public interest at the federal level has stood up under the strain. Federal intervention in utility strikes, therefore, would seem to depend, to some degree, on the policy of the federal administration in power.

But there is some growing feeling, in view of these increasingly troublesome local transit strikes, to give back to the states some authority for dealing with utility labor disputes at the state level.

Last December, the politically powerful American Farm Bureau Federation resolved: "(that) . . . we support federal legislation to establish the principle that state law continues to be valid and enforceable in state courts *unless there is a direct and positive conflict between an express provision of federal law and state law so that the two provisions cannot be reconciled or consistently stand together.*"

Since that time, Senators McClelland (Ark.), George (Ga.), Byrd (Va.), Russell (Ga.), and other southern Democrats have introduced a bill (S. 3143) which provides that ". . . no act of Congress shall be construed as invalidating a provision of state law which would be valid in the absence of such act *unless there is a direct and positive conflict between an express provision of such act and such provision of the state law so that the two cannot be*

(Please turn to page 30)

Seven Rural Telephone Systems Receive REA Loans

The U. S. Department of Agriculture on Feb. 12 announced seven loans made by the Rural Electrification Administration to improve and extend telephone service in rural areas of Indiana, Nebraska, Texas, Wisconsin, Massachusetts and Tennessee. Details of the seven loans, which amounted to $1,623,000, follow:

Smithville Telephone Co., Ellettsville, Ind., was extended a loan of $337,000, third loan, on Feb. 14.

The company plans to acquire, rehabilitate and integrate the Monroe County Telephone Co.'s facilities into its existing system, and to improve service in its Gosport exchange area. The facilities are now providing magneto and dial service to 1,277 rural subscribers over about 205 miles of line.

New construction to be financed by the REA loan includes automatic central offices at Ellettsville and Gosport, as well as 83 miles of line. About 166 miles of the existing line will be used in the enlarged system, 30 miles rebuilt and the remainder retired.

These changes will enable the borrower to improve service to the existing subscribers and offer initial service to 363 farm families and other rural residents in the community.

REA loans to the Smithville company amount to $910,000. The funds will make possible modern telephone service to 3,663 rural subscribers over 540 miles of line in Greene, Monroe, Morgan, and Owen counties. New automatic central offices at Smithville and Stanford already are in service.

Byron A. Draper is president and manager of the Smithville company.

*

Diller (Neb.) Telephone Co. was also granted an allocation of $382,000 on Feb. 14, first loan, to improve and expand rural telephone service in Gage and Jefferson Counties in Nebraska, and Washington County in Kansas.

The borrower, a commercial corporation, plans to convert its system to dial operation, and to acquire, rehabilitate and integrate the facilities of the Odell Independent Telephone Co. The companies now furnish magneto service to 784 subscribers through central offices at Diller, Harbine and Odell.

The Diller company proposes to construct three new automatic central offices, replacing the existing magneto facilities, and add 101 miles of line. Of 347 miles of existing line, 104 miles will be used in the existing system, 144 miles rebuilt and the remainder retired. The borrower plans to continue the existing service without toll charge among the three exchange areas.

With these changes, the Diller company will be able to offer improved service to the 784 existing subscribers and to serve 43 rural families in the area now without telephones.

Mrs. Florence B. Steffen is president and William G. Sandman is manager of the Diller Telephone Co.

*

Palo Pinto (Tex.) Telephone Co. on Feb. 14 was allocated $208,000, first loan.

The borrower, a commercial corporation, plans to convert its system completely to automatic operation, acquire access rights to the area served by the Millsap Telephone Exchange, and improve and expand rural telephone service in the combined areas. The two companies now furnish dial and magneto service to 296 subscribers through central offices at Millsap, Palo Pinto and Possum Kingdom. They operate 137 miles of line. The Millsap Telephone Exchange will continue to serve its subscribers until telephone service is available from the new system, at which time Millsap will dismantle its lines.

The Palo Pinto company proposes to construct new automatic offices at Millsap and Palo Pinto, retain the existing automatic facilities at Possum Kingdom, and add 56 miles of new line. Of the existing line, 54 miles will be used in the expanded system, 41 rebuilt and the remainder retired.

The borrower will be able to offer improved service to the existing subscribers and to bring telephone service for the first time to 155 farm families and other rural establishments in the area. The completed system will consist of 151 miles of line in Palo Pinto and Parker Counties.

Jess W. Turner Jr. is president and manager of the Palo Pinto company.

*

Citizens Telephone Cooperative, Inc., New Auburn, Wis., received an allocation of $335,000, first loan, on Feb. 14.

The new cooperative was formed by the voluntary consolidation of four small companies in Barron, Chippewa and Rusk Counties. It proposes to acquire the properties of the following companies as a nucleus for the new system: New Auburn Telephone Co.; Canton Telephone Co.; Dovre Telephone Co., and the Chetek-Farmers Telephone Co. The latter two consist of farmer-owned lines with no central offices. These telephone properties are providing magneto service to 443 subscribers over 128 miles of line, and to subscriber-owned facilities serving 62 families around Dovre and Chetek.

Construction plans of the cooperative call for new automatic central offices at Canton and New Auburn and 92 miles of line. About 120 miles of the existing line will be rebuilt and the remainder retired. The rehabilitated and expanded facilities will make possible initial service to 262 rural families in the service area, as well as improved service to the existing subscribers. The 62 subscribers owning their line will receive improved magneto service and continue to be switched into Chetek by the Northwest Telephone Co.

Orville Moe is president and Neill Tarr is coordinator of the Citizens cooperative.

*

Granby (Mass.) Telephone & Telegraph Co. on Feb. 15 was allocated $117,000, third loan.

The borrower plans to use these loan funds to provide service for 190 rural subscribers in its area for whom facilities were not provided in prior loans. The funds also will cover an increase in the proportion of private and semi-private service.

With the three REA loans, totaling $282,000, the Granby company will be able to offer new and improved service to 795 subscribers over 64 miles of line in Hampshire County.

(Please turn to page 49)

Line Concentrators for Telephone Plant

By H. G. EVERS and F. D. REESE

TELEPHONE COMPANIES soon may have a new means of economically improving service to rural and suburban areas without major additions to physical plant. This can be accomplished through use of a line concentrator, a device for distributing a number of subscriber lines over a substantially smaller number of trunks to a central office.

Investigation and experimental work on line concentrators of the type (shown in *Fig. 1*) has been an active project of the Leich Electric Co. of Genoa, Ill. During the past year, Leich and the General Telephone Co. of Pennsylvania have cooperated in a number of field trials on line concentrator units obtained from a European manufacturer.

These field tests, conducted on typical party-line rural and suburban service in Pennsylvania, have produced very encouraging results. With use of line concentrators the efficiency of outside plant has been increased 35 per cent to nearly 100 per cent.

Operation Concentrators

By distributing a number of subscriber lines over a substantially smaller number of high usage trunks to the central office, a line concentrator uses the same statistical advantages that are the basis of all telephone plant layout. To accomplish the maximum utilization of a relatively small number of lines, two concentrators are set up, one at the central office end and one at a convenient new point of subscriber line distribution.

The principle of layout is illustrated in *Fig. 2*. As can be seen, in a typical application nine lines are set up as subscriber trunks. At the office end, up to 49 individual line connections may be terminated in the concentrator. The office lines may employ manual or automatic switching without affecting basic concentrator operation. At the distant end, a similar concentrator unit provides termination for 49 subscriber lines.

It is the concentrator's task to provide an equal chance for office line access to all subscriber lines, regardless of whether the calls are incoming or outgoing. Subscribers get essentially the same service as through a Community Dial Office (CDO), with the fundamental difference, however, that direct switch connections between any two subscriber lines terminated on the *same* concentrator cannot be accomplished at the concentrator but must be completed at the central office, thus utilizing cen-

THE AUTHORS

H. G. EVERS

F. D. REESE

HARRY G. EVERS, chief engineer, Leich Electric Co., is a veteran of more than 25 years in the Independent telephone field.

From 1944 until he joined Leich in 1949, Mr. Evers was with Federal Telephone & Radio Corp. where he was in charge of setting up testing bureau and inspection standards. He also did development work in the design of private and community dial systems as well as special switchboards for the Armed Services.

Before joining Federal, Mr. Evers was employed by Automatic Electric Co., where he spent 10 years in engineering inspection including relay design, circuit testing and apparatus life tests. Then for 11 years, he worked on circuit design. His circuit design work included projects on interconnection with foreign systems, relay switchboard designs, switchboards for the Bell System and special control equipment for the Armed Services, including early drone plane controls.

*

FRANK D. REESE has been associated with General Telephone Co. of Pennsylvania since 1939. He was appointed chief engineer in 1952.

A native of Courtland, N. Y., he attended Courtland High School, Loomis Institute at Windsor, Conn., and Cornell University where he received his degree in mechanical engineering, and the University of Michigan Public Utility Executive program.

During World War II, Mr. Reese served with the U. S. Army Signal Corps. He is a member of the American Institute of Electrical Engineers, and a professional engineer licensed in Pennsylvania.

tral office equipment and two of the traffic-carrying lines.

Two concentrators with connecting lines may be considered a working system. In operation, one concentrator may be viewed as the mirror image of its distant partner. Switching connections toward the office must be the same as those toward the subscriber. Thus, precision coordination between the two ends of such a concentrator system is very important. This is accomplished by use of separate control trunks which are independent of the traffic-carrying lines between the two units. All the coordinating information for the 49-line capacity concentrators can be transmitted over two metallic pairs.

Use of Line Concentrators

Concentrators have been used in Europe for a number of years. They are in common use for apartment house service and in the exchange area for small communities. In recent years, design of such devices has taken on impetus since the introduction of a crossbar switch, which, because of its low-power requirements permits elimination of power supply equipment at the subscriber unit. A new type of crossbar switch has been developed by the Gfeller Co. of Switzerland and will be used as a model for introduction in this country. It is this type which has been used in trials forming the basis of this article.

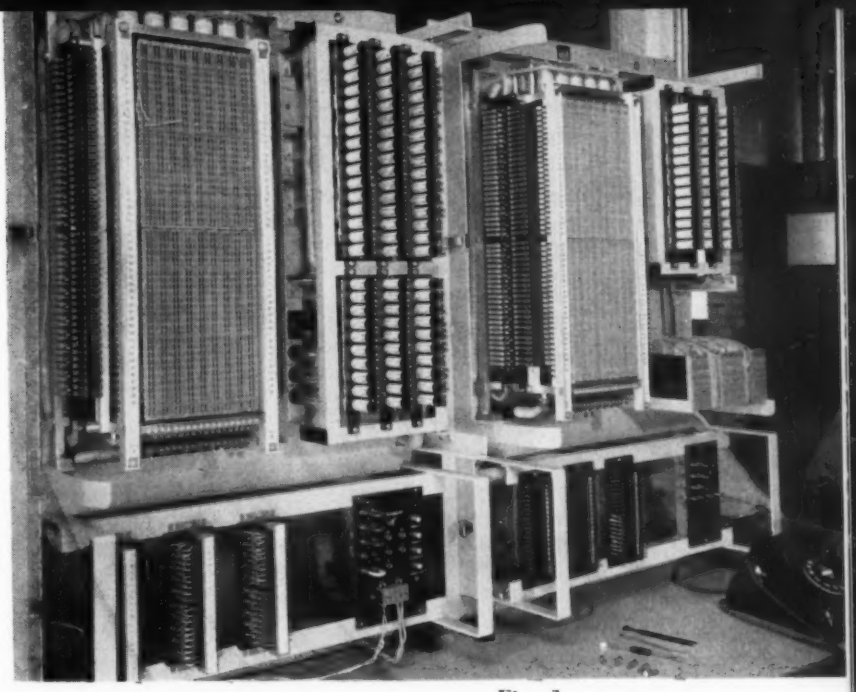

Fig. 1

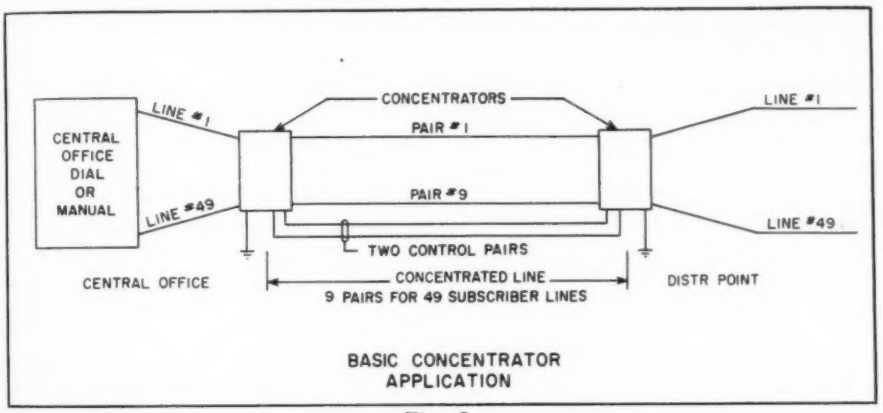

Fig. 2

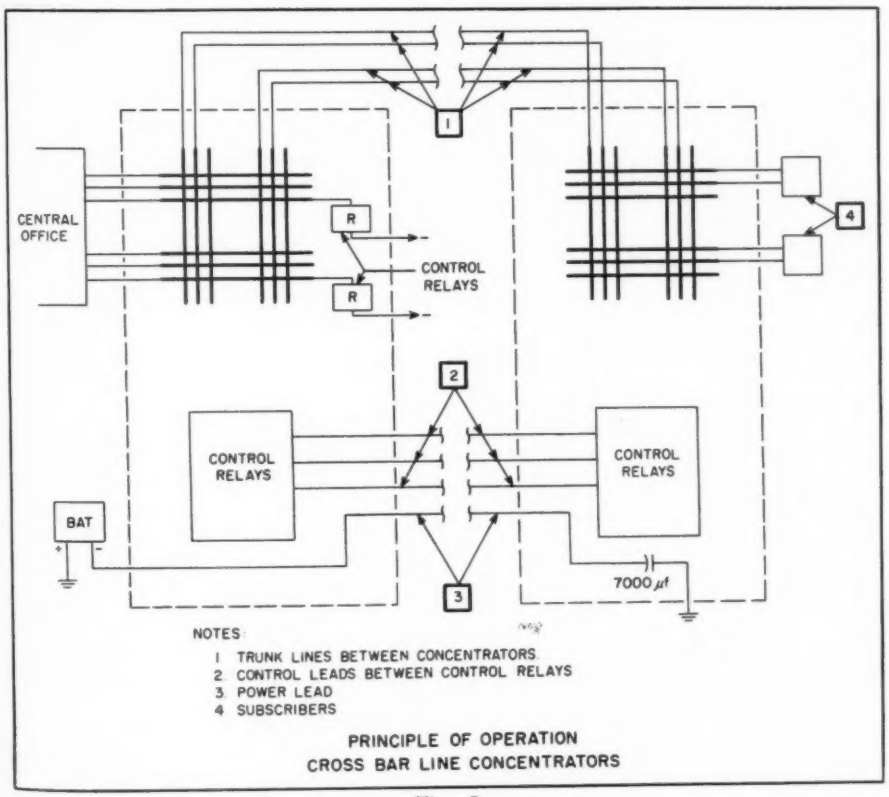

Fig. 3

A simplified block schematic of the crossbar switch is shown in *Fig. 3*. This arrangement permits a high speed selection with a minimum of moving parts. Incidental power requirements are moderate. Usually, power required to actuate the outlying distribution concentrator is transmitted over one conductor, using ground return. To accommodate conventional 48-volt battery operation over relatively long wire connections, the distribution concentrator is equipped with a capacitor of several thousand microfarads which supplies the high initial current to drive the switching magnet.

Only six relays are required to control trunk and line selections in each 49-line concentrator; with these, theoretically 63 combinations can be established but only 59 are utilized. The line combination No. 50 is reserved for testing for idle or out-of-service traffic trunks.

Once a particular subscriber line is through-connected over one of the trunks, it remains so connected, even after the talking subscriber has replaced his receiver, until the trunk is marked again for seizure in the trunk rotation. Subsequent calls to or from any line so connected may be made

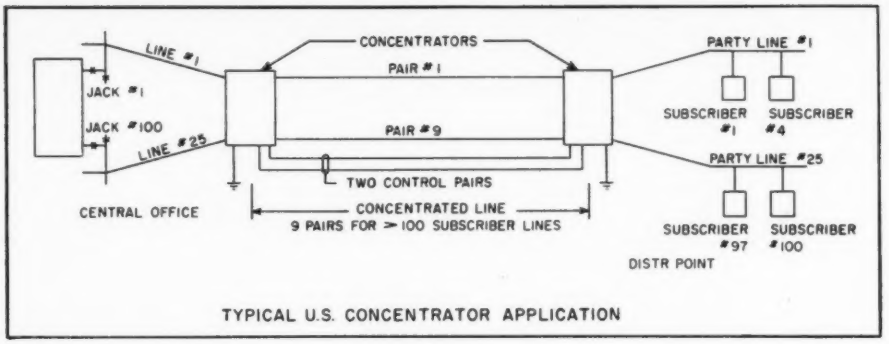

Fig. 4

without causing any operation of the concentrator, so long as the trunk is not marked for seizure while idle between calls.

Thus, at any given time, idle trunks, not marked for seizure, remain connected to the last line which used the trunk. With this feature, the concentrator takes itself out of operation as much as possible, and assures that a maximum number of lines remain set up for incoming or outgoing calls, even if the actuating power should suffer an interruption.

Application in the U. S.

On rural and suburban lines, multi-party-line service is common practice. The growing demands for more and higher grades of telephone service by a rapidly increasing population in such areas provides a severe test for Independent telephone companies. In many cases, rapid expansion of the physical plant is technically impeded even if the economics could be ignored. But, most of all, despite the existent pressure, the type of service in question is for low-rate exchange service which lacks the quantity aspects of metropolitan subscriber density.

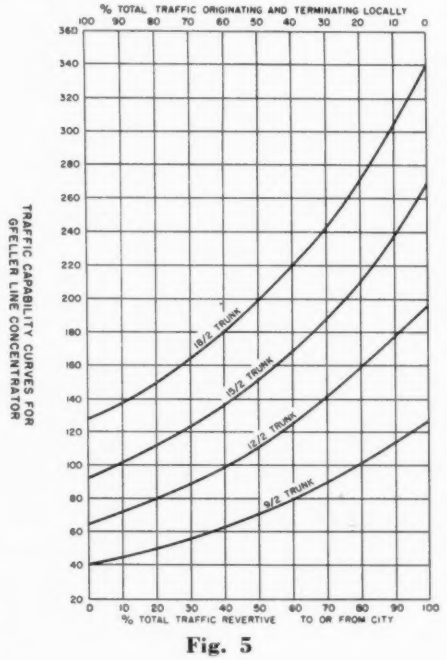
% TOTAL TRAFFIC ORIGINATING AND TERMINATING LOCALLY
TRAFFIC CAPABILITY CURVES FOR GFELLER LINE CONCENTRATOR
18/2 TRUNK
15/2 TRUNK
12/2 TRUNK
9/2 TRUNK
% TOTAL TRAFFIC REVERTIVE TO OR FROM CITY

Fig. 5

Consequently, an inordinately large investment in outside plant for a comparatively few, widely-scattered subscribers is involved. Solutions for this problem have included increased party-line exploitation—in some cases over 20 parties to one line—as well as introduction of carrier transmission to increase the cross-section of trunk-line plant.

To these, the line concentrator will add new flexibility. When judiciously applied, it will permit a high grade of party-line service on each of 10 to 20 subscriber lines. Such an application is illustrated in *Fig. 4*. As can be seen, a total of 11 lines (nine trunks, two control pairs) are required to give four-party service to 100 subscribers, where otherwise 25 lines are required. The concentrator may also be used to defer plant additions in a most economical and convenient manner.

For example, the opening of a new housing development frequently results in a heavy requirement for new service in an area served by a cable which already has a high percentage fill. With the concentrator, the new service can be accommodated at once (insuring cordial customer relations) with a relatively small investment as compared to placing relief cable. In cases where provision of relief cable would be expensive, the concentrator will frequently pay for itself out of the savings in deferred carrying charges on new plant.

Larger-capacity concentrators will also be available. The efficiency of this system rises rapidly with the number of trunks available. Traffic capability curves, illustrated in *Fig. 5*, show this quite impressively. An increase from nine to 12 trunks (less than 35 per cent additional outside plant) increases traffic capacity by 65 per cent. If the number of trunks were doubled, traffic could be increased by a factor of three.

It is in this ability that the concentrator system has promise for not only solving the new-subscriber emergency but also for upgrading service. This feature can be particularly enhanced by the combined use of concentrators and carrier systems so that a fairly high number of concentrator trunks can be set up on wire lines with a limited number of pairs.

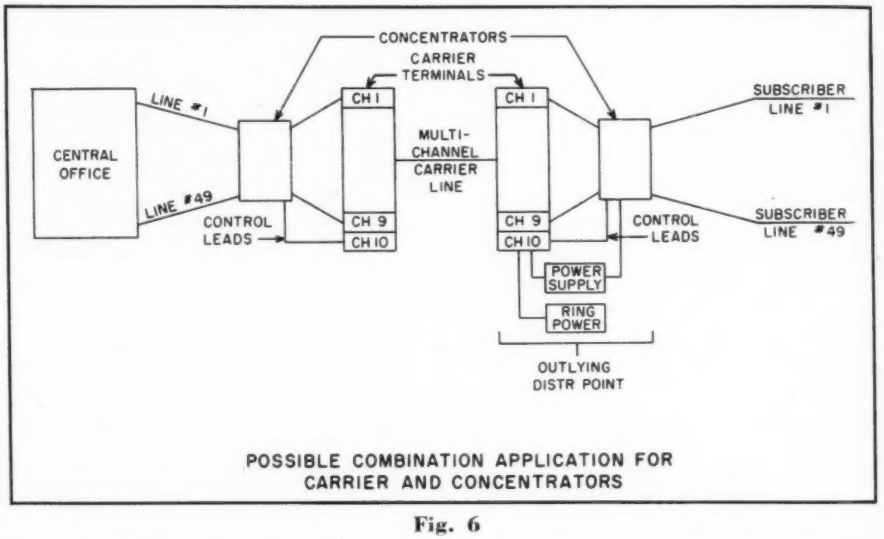

Fig. 6

This type of a plant arrangement is illustrated by block diagram in *Fig 6*. The details of such arrangements are presently under study, and will require the development of suitable applique equipment before widespread use will be possible.

Trials in Pennsylvania

Line concentrators manufactured in Switzerland were obtained in 1954. Three separate field trials were set up, starting in January, 1955, using equipment designed to serve a maximum of 49 subscriber lines over nine traffic-carrying lines.

In all three cases, the concentrators were installed in the area served by the General Telephone Co. of Pennsylvania. The first two trials were of relatively short duration, lasting from Jan. 14 to Jan. 25 and from Feb. 2 to Feb. 14, respectively. The service

conditions were as follows:

(1) The first trial was serving official PBX stations at the telephone plant building in Erie, Pa. The official PBX is located at the central office in downtown Erie. Twenty-four dial PBX lines were served. The subscriber end unit of the line concentrator was installed in an office at the plant building which is connected with the central office by 8,338 feet of 26-gauge cable and 3,471 feet of 22-gauge cable.

(2) The second trial was serving rural lines working out of the Erie-Cherry sub-office. The subscriber end unit was mounted on a pole beneath a cross-connect box to facilitate connecting the equipment without making a cable splice. A salvaged wooden cross-connect box was used to protect the unit from the weather. The mounted height of the unit allowed work to be done while standing on the ground. A total of 2,392 feet of 24-gauge cable and 13,209 feet of 22-gauge cable connected the subscriber end unit with the central office unit. Lines working out of the line concentrator were over cable with the longer lines running into open wire leads. Twenty lines—most of them multi-party—serving 122 main stations were worked out of the units.

(3) The third trial was serving rural lines working out of the Waterford, Pa., central office which has all-relay equipment serving approximately 250 lines. The subscriber end unit was again pole-mounted the same as before, except that it was installed in an open wire lead. Seventeen pairs of wires were dead-ended both ways on the pole affected; drop wire brought them into the box housing the line concentrator. Sixteen multi-party lines and one pay-station line serving 119 main stations were worked out of the unit. The subscriber end unit was connected with the central office by 2,500 feet of 22-gauge cable and approximately 15,000 feet of open wire. The open wire used for the control leads was 0.109 iron and the trunks were 0.104 copper. Ground for the subscriber end unit was obtained from the central office using one of the copper pairs giving a ground resistance of about 26 ohms.

Traffic observations under these conditions were recorded as follows:

(1) During the first trial no traffic figures were recorded, but the 24 PBX lines apparently were served without overloads except during the periods when several trunks were out of service. Several persons noted that there was a delay in getting dial tone at that time. Observations of the equipment during the busy periods of the day showed several brief periods when all trunks were busy, but none was more than a few seconds duration. Many of the PBX lines have quite heavy usage with a number of extensions on each line.

(2) The traffic from the lines served out of the Erie-Cherry office was in excess of what the nine trunks could handle, particularly during days of severe weather and the service was degraded considerably at times. An all-trunk-busy indication was brought to a clock and register which were read hourly from 8 a.m. to 9 p.m.

During the first few days of this trial, ATB periods were occurring for a few minutes each evening but more inclement weather starting Feb. 8 apparently increased telephone usage so that ATB periods occurred more often and during other times of day. Increasingly severe weather brought on a peak usage on Feb. 11 from 10 a.m. to 11 a.m., in which hour the ATB register counted 40 periods with a total elapsed time of 33 minutes. The 20 lines served 122 main stations. The area served is mostly suburban housing with a few farms on the longer line. This experience confirms the heavy traffic demands of suburban areas.

(3) During the third trial, traffic from the 17 lines has overloaded the unit only occasionally, there being 119 main stations served. A register on an ATB lead, a register on the marking circuit and a false marking register were connected. As the Waterford central office is only partially attended, regular readings were not taken, but over a period of one week there were 57 ATB registrations. No false markings were registered in this period.

While the ATB periods were not excessive, it is still apparent that the traffic was near the limit that the nine trunks can handle. Considering that the weather was fairly mild, it is probable that the service would have been degraded if the weather had become more severe because weather conditions appear to affect traffic considerably. The area served includes a very small community known as Mill Village and the surrounding farms.

Conclusions

The line concentrator can be an important tool in improving telephone service. Depending on the area and subscribers to be served, service may include multi-party, two to four-party or single-party lines.

For example, four-party service for 100 subscribers would normally require 25 cable pairs to the central office. With the concentrator, less than half as many pairs would be needed to upgrade most of the 100 subscribers to two-party service, and outside plant would be made available for extending new service or upgrading other service. Combinations of different grades of service may also be efficiently employed, depending upon local circumstances.

Introduction of this technique in the telephone field should materially contribute to providing more and better service for the public.

1956 Convention Calendar

Association	*Date*	*City*	*Hotel*
Texas	Mar. 12 and 13	Dallas	Baker
Ohio	Mar. 27 and 28	Columbus	Deshler Hilton
Nebraska	Apr. 3 and 4	Omaha	Paxton
Iowa	Apr. 10 and 11	Des Moines	Fort Des Moines
North Dakota	Apr. 24 and 25	Fargo	Gardner
Indiana	May 9 and 10	Indianapolis	Claypool
Illinois	May 16 and 17	Peoria	Pere Marquette
Pennsylvania	May 22 and 23	Bedford Springs	Bedford Springs
Wisconsin	May 23 and 24	Madison	Loraine
Washington-Oregon*	May 31 and June 1 and 2	Portland, Ore.	Multnomah
Kansas-Missouri*	June 4 and 5	Kansas City, Mo.	Muehlebach
California	June 6, 7 and 8	San Francisco	Fairmont
New York	June 11, 12 and 13	Schroon Lake	Scaroon Manor
Maine, New Hampshire, and Vermont*	June 19, 20 and 21	Rye Beach, N. H.	Farragut
Michigan	Sept. 6 and 7	Grand Rapids	Pantlind
Arkansas	Sept. 17 and 18	Hot Springs	Arlington
Rocky Mountain	Sept. 20 and 21	Salt Lake City, Utah	Utah
North Carolina	Oct. 4 and 5	Pinehurst	(unannounced)
USITA (Annual convention)	Oct. 15, 16 and 17	Chicago	Conrad Hilton
Virginia-West Virginia*	Nov. 1 and 2	Roanoke	Roanoke
Oklahoma	Nov. 7 and 8	Oklahoma City	Huckins Thomas
Alabama-Mississippi*	Nov. 12 and 13	Birmingham, Ala.	Jefferson

*Joint convention

THE Plant Man's Notebook

BY RAY BLAIN, TECHNICAL EDITOR

WE HAVE RECEIVED a letter from a reader who recently moved into a strange town and a housing development where the telephone service is being furnished by a large Independent operating company.

While waiting for his telephone to be installed, he was forced to use the public telephones installed in outdoor type booths located at regular intervals throughout the housing project. Our reader has the following to say about this service:

"These booths are well located and plainly marked. The lights, however, operate in only a few of them. I have found only one with a directory. There are no operating instructions posted for the assistance of strangers in the community.

"The transmission was so low the last time I used one of these telephones that the local operator requested me to go to another station. She did not inquire as to the number of the telephone I was using so that she could report it in trouble."

It does seem lamentable that some operating companies are so careless as to neglect the maintenance on their public telephones installed in outdoor booths. Certainly, inferior service over these telephones is not a good advertisement for any telephone company.

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We recently observed a demonstration of an acoustical switching device that can be controlled by a telephone and used to perform various operations. This device is placed in a room with the telephone and plugged into a commercial power supply. Physical connection with the telephone or line is not necessary.

When a call is placed to this telephone and it is permitted to ring a specified number of times, the device will actuate a switch that can be used to perform numerous operations such as turning on a light, a recorder, bells, etc. The switch may be released on a time-delay basis or by dialing the telephone again and permitting it to ring a certain number of times. Various codes may be used and changed as required.

There is no doubt that devices of this nature will eventually increase the usefulness of our telephone service.

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The writer made a rush trip to the West Coast and back recently which we believe demonstrates the advantages to be gained from modern air travel. We left Washington, D. C., at 1:00 p.m. Tuesday afternoon on United Air Lines. Changed planes in Chicago for a direct non-stop flight to Seattle. We enjoyed a beautiful sunset out of Chicago. A sunset lasts a long time when you are flying into it at an altitude of 18,000 feet and at a speed of 350 miles per hour. Arrived in Seattle at 9:00 p.m. and got a good night's rest in a hotel.

The next two days were spent with the engineers of the Alaska Communication System. Here, also, we met C. C. Duncan, Eldon Nichols and H. H. Bartlett, of the AT&T's Long Lines. These men are all busy on the Bell System's submarine telephone cable projects. These projects involve the Atlantic and Pacific oceans and the Alaskan waters and they can and do tell some mighty interesting stories about their work.

Then we caught a return plane leaving Seattle at 8:00 a.m. Friday morning for a direct flight to Chicago. A change of planes again in the Windy City and we arrived back in Washington at 9:00 p.m. The total air line distance for the round trip was about 5,000 miles. The total flying time was less than 17 hours. Certainly, so much could not have been accomplished in such a short period of time by the use of any other means of transportation.

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We enjoyed a visit recently with D. J. (Cap) White of the Everstick Anchor Co. We always enjoy these visits with Cap, as he briefs us on all of the latest anchor developments. In our opinion, he is the world's leading authority on the use of guys and anchors.

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In a letter we have just received from A. John Falk Jr., of the Chesapeake & Potomac Telephone Co., in Washington, D. C., the following question was asked:

"Over the past several months there have been numerous articles published regarding transoceanic communication cables. In most articles a photograph of *HMTS Monarch*, the cable-laying ship, appears. Apparently the Monarch pays out the cable over the bow sheaves instead of over the stern (although I have seen pictures showing cable being laid over the stern).

"I would be most appreciative if you could report the reason why cable is paid out over the bow rather than, as logic indicates, over the stern."

We have discussed this subject with several submarine cable engineers and one master of a cableship. These men all seem to be in agreement with the fact that cable may be paid out either over the bow or the stern of a cable ship. It is generally agreed that cable can be picked up only over the bow of the cable ship.

The ship maneuvers better, however, when the cable is laid from the bow. For this reason, short lays made in shallow water are generally over the bow. Cable ship pictures are generally made near the shore and as a result the cable is usually pictured as being paid out over the bow.

Long lays in deep water may be and often are made over the stern.

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We recently enjoyed a talk titled: "The Origin and History of Automation," given by Dr. A. V. Astin, director, National Bureau of Standards, at a meeting of the Armed Forces Com-

munications & Electronics Association in Washington, D. C.

Dr. Astin mentioned that automation was probably started by the ancient Romans when they used a float valve to maintain the water level in their marble fountains. Furthermore, the flour mills of a hundred years ago made use of a simple form of automation. The art has, however, become more precise with the development of electronics, and the electronic computer will play a most important part in its future growth.

Several of the leading exponents of "systems automation" provided displays, short films, models and photographs of their talents and products that were on exhibition from 9 a.m. until 7 p.m.

Companies participating in the display were: American Car & Foundry, Admiral Corp., General Electric Co., General Mills, Melpar, Inc., RCA, Stromberg-Carlson and United Shoe Machine Corp. Each company had an engineer or technician on hand to answer all questions.

During periods of heavy rains, many basements are flooded. It is always a shock to wake up in the morning and find water in the basement, whether it be a few inches or several feet.

A so-called "Water Watchman" is now on the market, but it is so simple that it could be easily fabricated locally by any practical telephone man. This device sounds an alarm when water starts seeping into the basement. It consists essentially of a bell or buzzer circuit with two contact springs held apart by an aspirin tablet. The slightest trickle of water causes the aspirin to dissolve, the contacts to make and the alarm to sound. This might be dubbed a sure cure for the headaches of a flooded basement.

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We hear a lot these days about special equipment for the modern home. The slogan we like best though is the "well-telephoned home," which means a home with complete telephone coverage and convenience.

Many people in this modern age have two cars, two television sets, two refrigerators and all of the other modern conveniences, but only one telephone. Perhaps many of the operating telephone companies are at fault in that they have not familiarized their customers with the low cost of the many modern telephone conveniences. However, we believe that this omission is being remedied in most communities by an accelerated sales program by the telephone company.

Plant Man's QUIZ

BY RAY BLAIN, TECHNICAL EDITOR

Q. We have heard several reports of late to the effect that polyethylene cable buried directly in the ground by the use of a cable plow has proved more economical than aerial plant construction. Do you know this to be a fact?

A. We have recently read a report on this subject made by one large operating company that appears to confirm the story. Within a period of less than a year after polyethylene-insulated cable and underground wire were adopted as standard, they have proved for this company to be the most effective means yet developed for the provision of rapid and economical telephone service in rural and semi-rural areas.

The report states further that the cable, in sizes generally used in such areas, lends itself well to being buried directly in the ground — a practice which has several inherent installation advantages over aerial cable plant and which is rapidly becoming economically competitive. Some of the principal benefits which have manifested themselves in the use of this plant are:

(1) Projects require less engineering time.

(2) Minimizes right-of-way problems since highway authorities generally prefer buried plant to pole lines in the confines of road right-of-way.

(3) Eliminates expensive right-of-way clearance.

(4) Eliminates rental and attendant expense involved in joint use pole line construction.

(5) Provides a high degree of protection against storm, fire and mechanical damage.

(6) Substantial economy in installation since the use of skilled craftsmen is substantially minimized.

(7) Simplicity of plant design permits completion of more projects without an increase in personnel.

This particular company buries the cable in readily accessible locations along roads by the use of specially designed, contractor-owned and operated mechanical equipment. This equipment incorporates plow-mounted reel techniques and is especially adapted for burying cable at a depth of 18 to 24 inches with a minimum of earth movement and disturbance of topsoil.

Supplementary equipment is used to rapidly close the plow trench and to excavate the short subsidiary trenches required to accommodate the cable laterals to nearby pedestals or poles on which are mounted the terminals and loading facilities.

Similar reports have been received from various operating companies in different sections of the country. However, we do not intend to infer that buried cable can be used to advantage in all areas. It is believed that all local conditions should be evaluated carefully before attempting to make extensive use of buried cable plant in an unproved area.

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Q. How often should it be necessary to add water to lead-calcium-type storage batteries?

A. We have been informed by one battery manufacturer that when its lead-calcium batteries are operated according to their prescribed instructions, the addition of water will be required only about once or twice yearly. Excessive water requirements indicate overcharging and corrective action should be taken immediately. When water is added, the cells should never be filled above the high-water mark.

By the same token, the levels in the cells should never be permitted to drop below the low-level mark.

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Q. When carrier equipment is installed in pole-mounted cabinets, is it considered necessary that the cabinets be bullet-proof?

A. It is our understanding that some of the cabinets used for this purpose are bullet-resistant. This type of cabinet would probably turn an ordinary bullet from a 22 rifle, but would not stop one from a high-powered rifle.

It is generally not considered necessary to protect against bullets from a high-powered rifle in view of the cost and the small probability of equipment damage from this source.

XUM

THE Operator's Corner

By MAYME WORKMAN — TRAFFIC EDITOR

"I GOOFED!" In "The Operator's Corner" of the Dec. 31, 1955 issue of TELEPHONY, Question No. 4 was: "If the calling party cancels a person call and at the same time places a station call to the same number, what entry should be made on the toll ticket?" The answer given was, "Enter 'ag sta. (time)' in the space for reports, cancel the original ticket, write a new OUT ticket, and proceed as on a new call except that, if the called telephone is holding the line, at once establish connection." The answer given was in accordance with Division A, Section 22, Rule 2c of my *Toll Operating Practice, Cancellation Of Calls and Disposition Of Calls At Midnight.*

In January, 1955, "a c" of this section was canceled and, unfortunately, this instruction failed to reach me.

The correct answer to Question No. 4 in "The Operator's Corner" of Dec. 31 is contained in Division A, Section 7, Page 7, Rule B, paragraph 2, namely: "Enter 'ag (alternate)' in the space for reports, and proceed in general as if the alternate were specified when the call was placed. Make any necessary corrections on the ticket if the call is completed or remains active."

And, as George Gobel would say, "There you are!" I'm sorry I goofed, but it was not intentional, believe me. I hope everyone who read the incorrect answer will also read this issue of "The Operator's Corner" and believe you me, there were a goodly number who read the wrong answer, judging from the number of letters and calls I received in regard to it.

Since I started to write "The Operator's Corner" in 1932, more than 3,600 questions and answers have been published and, to the best of my knowledge, less than six incorrect answers have been published—and I regret each one of them. Sometimes a practice is revised before the material prepared for publication appears in print.

Speaking of errors reminds me of a story my Dad used to relate. It was in the days when turkeys, ducks and geese were raffled in saloons. It seems two German men were involved in the story, one the saloon keeper and the other a customer. The saloon keeper said, "And now ve vill raffle off the gooses." The customer said, "Ha, ha, ha! In dis country 20 years and he still says 'gooses' for 'geeses.'"

It never occurs to me to question anything contained in the *Toll Operating Practice,* but in order to have this confidence in the book, it must be kept up-to-date. Failure to make authorized corrections or replacement of pages will result in errors. The best time to do this is when the corrections and new sheets arrive, if they are to become effective at once.

One of my responsibilities as a traffic supervisor was to check the *Toll Operating Practice* in the exchanges I visited. Perhaps this would not happen today, but occasionally I would find a *Practice,* covered with dust, on a shelf in a closet with a stack of new pages which had not been filed, and surely had not been read.

The *Toll Operating Practice* is an invaluable book of reference in a telephone exchange and should be treated as such. It is wonderful to have a source of information which is able to supply the answer to so many questions, particularly today with so many innovations taking place.

The telephone industry is advancing so rapidly, it is difficult to keep pace with it. People in a supervisory capacity who do not work at the switchboard must depend more and more upon the *Toll Operating Practice,* for it is much more difficult to retain information, routines and practices when you do not apply them personally from day to day.

My sincere thanks to all who called my attention to the incorrect answer to Question No. 4 in the Dec. 31 "Operator's Corner." While I regret that I "goofed," it is gratifying to know that you are referring to "The Operator's Corner" for the information you desire.

Traffic Questions

(1) When should the OTC operator write a memo ticket on an Overseas or Mexico call?

(2) What details should the OTC operator enter on overseas or Mexico memo ticket?

(3) What disposition should be made of an Overseas or Mexico ticket when it has served its purpose?

(4) How should the outward operator announce an Overseas or Mexico call?

(5) Who is responsible for completing an Overseas or Mexico call?

Answers are presented in page 29.

Help for PBX Service Advisers and Customers

Many Independent telephone companies have found it necessary to give more consideration to the important place PBX operators play in the nationwide telephone service. Especially is this true of companies experiencing an increase in PBX subscribers with the decentralization of industry into smaller cities and towns served by Independents.

During the past two years, TELEPHONY had published several articles on the importance of PBX operators which gave suggestions as to how telephone companies can help PBX customers get the most out of their telephone service and facilities.

On the page at the right we continue to stress this subject by publishing the first part of a 28-section article which will comprise a "PBX Service Advisers' Handbook." We hope it will be of help to Independent companies and that they will use the material in training employes and in assisting their PBX subscribers.

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TELEPHONY'S
PBX Service Advisers' Handbook
By Gilbert R. Brackett

Foreword

The telephone company is for the main part a service organization. Service is what it has to sell; in fact, service is about all it has to sell.

The correct operation of private switchboards in placing outgoing calls, the speed with which incoming calls are accepted and the manner in which they are disposed of has a direct influence on the over-all character of the commodity—service—the company has to offer to its telephone customers.

In most communities, with an average number of commercial enterprises, 16 per cent of the total telephone stations terminate on PBX systems. Roughly, 60 per cent of all local and long distance calls either originate or end up at a private switchboard. The out-toll receipts from this same group of customers is approximately 33⅓ per cent of the total toll revenue. In other words, 60 per cent of telephone traffic is controlled by 16 per cent of the total exchange stations and one-third of the toll revenue comes from this same small group of telephone users.

Reprints Will Be Available

With the decentralization of industry into smaller communities, many Independent telephone companies will be faced with increased installations and servicing of PBX systems. This handbook is being published to aid those companies in assisting their PBX customers to effect efficient operation of their systems.

Following the publication of all sections of the "PBX Service Advisers' Handbook," they will be available in reprint form (size of standard handbook), providing there is a sufficient demand to justify reprinting.

TELEPHONY'S
PBX Service Advisers' Handbook
By Gilbert R. Brackett

With such figures as a basis, it is easy to understand that these PBX calls must be handled properly and quickly if there is to be a saving in time and effort on the part of the PBX attendants and central office operators, and if more productive use of PBX and central office equipment is to be gained. If the calls are sped along their way with circumspection, the results will be a reduction in customer complaints, a better satisfied telephone user and much improved public relations. Common sense tells us that the sum and total of such customer reaction adds up to increased revenue for the telephone company and a cost savings to the PBX customer.

After all, the responsibility of good telephone service rests with the telephone company. They are obliged to see to it that PBX attendants have full knowledge of the correct way to operate their switchboard equipment and are familiar with the *overtones* that spell the difference between creditable service and a mediocre service. Also, it is an obligation of the telephone company to educate the PBX customer management and the extension user to become telephone-wise, in order that they can and do get the most out of the equipment they are paying for.

Dial service is being extended rapidly to handle both local and long distance calls. As a result, telephone users meet up with central office operators less and less frequently and deal proportionately more often with PBX attendants. The general telephone using public is increasingly forming its opinion of the whole telephone industry by these growing contacts with PBX attendants. And so, the PBX Service Adviser's responsibility in training PBX people and developing their service attitudes is constantly becoming of greater importance.

This handbook has been prepared, and is being published, to help PBX Service Advisers and Instructors. No attempt has been made to cover all conditions or details of PBX practices nor all the problems of the PBX customer.

XUM

Courts and Commissions

Wisconsin Independent Gets Authority for Rate Increase

The Wisconsin Public Service Commission recently authorized the Lodi Telephone Co. to increase rates $6,202 annually.

The company said the additional revenues were necessary because of increased wages and associated costs.

Switchboard operators are now receiving less than the revised federal minimum wage of $1.00 an hour which goes into effect Mar. 1.

The commission said the authorized rate increase will give the telephone company an annual net operating income of $3,959 and a rate of return of 6.5 per cent on its net investment cost rate base of $60,944.

New rates include the following:

One-party residence	$4.50
Two-party residence	3.60
Rural multi-party residence	2.55
Two-party business	5.75
Rural multi-party business	3.00

General of Cal. Requests 750,000 Common Stock Issue

General Telephone Co. of California, Santa Monica, has asked the California Public Utilities Commission for authorization to issue and sell 750,000 shares of its common stock, it was reported on Feb. 13 (TELEPHONY, Jan. 14, p. 36).

Proceeds will be used to finance construction and to pay off short-term notes.

R. K. Chase, secretary-treasurer, said the issue will be sold to the company's parent firm, General Telephone Corp.

Six Minn. Companies Gain Raises Due to New Wage Law

Six rate increases for Independent companies were authorized on Feb. 8, 20 and 21 by the Minnesota Railroad & Warehouse Commission to enable the companies to offset effects of the 1955 amendment to the federal Fair Labor Standards Act (TELEPHONY, Nov. 26, 1955, p. 32).

The six Independents, the number of of stations each serves, and the total amount of the rate increases are as follows:

Chisago County Mutual Telephone Co., Center City:	
Local stations	164
Rural stations	584
Amount of rate increase	$ 2,185
Hastings Telephone Co., Waconia:	
Local	2,275
Rural	557
Rate increase	$ 5,878
Pioneer Telephone Co. of Waseca County, Waconia:	
Local	424
Rural	493
Rate increase	$ 2,073
Twin Valley-Ulen Telephone Co.:	
Local	441
Rural	362
Rate increase	$ 4,809
Watertown Telephone Co.:	
Local	3,283
Rural	1,271
Rate increase	$17,371
Western Telephone Co., Springfield:	
Local	871
Rural	423
Rate increase	$ 4,054

Bell of Nevada Wins Ruling In Local Tax Case

The Nevada Public Service Commission on Feb. 13 issued an order permitting the Bell Telephone Co. of Nevada to pass on to its customers in Sparks a 5 per cent gross business levy imposed upon utilities by that city (TELEPHONY, Feb. 18, p. 30).

The commission said the Bell company could collect the 5 per cent local tax from its Sparks customers, in addition to a "nominal collection and disbursement fee not to exceed one-half per cent."

The commission indicated it found acceptable the arguments by the company that absorbing the tax would in the long run result in passing it on to all customers in their systems, thus discriminating against those customers not benefiting from the levy.

Gains Ore. OK of $5,000,000 Bond and Stock Sale

The Oregon Public Utilities Commissioner on Feb. 17 approved the application of the West Coast Telephone Co., Everett, Wash., to issue and sell to the following insurance companies 3½ million dollars of first mortgage bonds, 3¾ per cent series due 1985, at private sale for a price equal to the face amount thereof, plus accrued interest to date of delivery, as follows:

New York Life Insurance Co.	$2,000,000
Continental Assurance Co...	1,000,000
Modern Woodmen of America	500,000

The commissioner also authorized West Coast Telephone to issue and sell 60,000 shares of cumulative preferred stock, $1.24 dividend series, at private sale for a price of $25 per share, being the par value thereof, to a group of institutional investors, as follows:

New York Life Insurance Co.	12,000 shares
The Mutual Life Insurance Co. of New York	23,000 shares
Investors Mutual, Inc.	19,000 shares
Modern Woodmen of America	6,000 shares

The estimated proceeds from the bond sale will be 3½ million dollars, the estimated expense $17,550, leaving net proceeds of $3,482,450.

Estimated proceeds from the stock sale will be 1½ million dollars, the estimated expense $11,650, leaving net proceeds from the sale of said stock of $1,488,350.

The net proceeds from the sale of both securities issues will be $4,970,800.

The West Coast company was ordered to use the proceeds from the bond and stock sales "to reimburse its treasury for moneys expended for construction, completion, extension and improvement of its facilities and those of its subsidiary and, upon the reimbursement of its treasury, to pay and retire its short-term bank loans, and . . . to use the balance of said proceeds for construction, completion, extension and improvement of its facilities and those of its subsidiary . . ."

Missouri Company Asks OK For Financing, Purchase

Marion Rural Telephone Co., Philadelphia, asked the Missouri Public Service Commission for permission recently to borrow $292,000 from the federal government, enlarge its stock issue and purchase three northeastern Missouri telephone exchanges.

The new company said it wanted to buy and modernize the Philadelphia

Telephone Co., the Emden Telephone Co., and the Benbow Telephone Co.

Besides the federal REA loan, it would finance the purchase and modernization program by issuing 1,600 shares of common stock with a $10 par value and 1,600 shares of preferred stock with a $40 par per share.

Oregon Independent Gains Approval of 5.86% Return

A rate of return of 5.86 per cent and raised rates were authorized for the Sunnyside Telephone Co. on Feb. 24 by the Oregon Public Utilities Commissioner.

Increased gross annual revenue of $8,198.24 was approved in order to produce this return.

In his order, the commissioner observed:

"Service conditions prevailing in the company's Sunnyside and Damascus exchanges have been unsatisfactory. It is necessary for applicant to borrow funds to improve its service facilities and convert to dial.

"However, it is practically impossible for applicant to borrow such funds on its present rate of return. With improved earnings, funds should be readily available."

The commissioner found that for the 12 months ending Dec. 31, 1955, the Sunnyside company experienced a rate of return of 1.60 per cent based on an average net plant and working capital of $125,637.20. The rates as proposed provide additional annual gross revenues of $8,198.24. Based on an adjusted average net plant and working capital of $125,695.36, the approved rates will produce a rate of return to the company of 5.86 per cent.

Ohio Independent Gets OK On $2,000,000 Stock Issue

The Northern Ohio Telephone Co., Bellevue, on Feb. 17 got permission from the Ohio Public Utilities Commission to issue nearly 2 million dollars in stocks to partly re-imburse its treasury for improvements made during the last two years.

The company in 1954 and 1955 spent $3,658,038 in additions to its plant. It asked and received permission to sell 70,290 shares of common stock which will be offered present stockholders at $28 a share.

Asks Raised Rate Schedule

Hooper Telephone Co. has applied to the Nebraska Railway Commission for revised rates at its Hooper, Winslow and Uehling exchanges.

Answers to Questions On Page 26

(1) Write a memo ticket if in your judgment it will be needed.

(2) Enter such details as: the routing directions; the name of the circuit-terminal office and the Overseas (or Mexico) operator number, the calling number when the call is received over a manual recording trunk or when the customer is released due to NC.

(3) Scratch the ticket when it has served its purpose.

(4) Say "(Calling place) customer on line."

(5) The Overseas (or Mexico) operator is responsible for completing the call and giving any necessary reports to the calling telephone.

Nebraska Company Receives Schedule For Purchases

The Northeast Nebraska Telephone Co., Hubbard, which recently purchased four telephone companies: Concord Farmers & Merchants Telephone Co.; Dixon Telephone Co.; Martinsburg Telephone Co., and Jackson Telephone Co. (TELEPHONY, Feb. 11, p. 36), also received Nebraska Railway Commission approval of the following rate schedule:

Business

One-party	$7.50
Two-party	6.75
Four-party	6.00
Multi-party rural	6.50

Residence

One-party	5.00
Two-party	4.50
Four-party	4.00
Multi-party rural	4.50

The rates will be effective upon the conversion of each to automatic. Funds for modernizing the operating facilities will be obtained through an REA loan of $390,000. The company will issue membership certificates not to exceed 1,000 in number at $10 each, and a maximum of 800 equity certificates at $30 each to provide equity funds.

Two Wis. Companies Request OKs on Rates, Purchase

The Wisconsin Public Service Commission on Feb. 27 was scheduled to hear the application of the Pine River Telephone Co. for authority to increase rates.

The application of the Frederic Telephone Co. for authority to purchase the West Sweden Telephone Co., was to be heard before the commission on Feb. 28.

NW Bell Given New Order On Teletypewriter Service

The Northwestern Bell Telephone Co. has been authorized by the Nebraska Railway Commission to change a provision in its tariff relating to teletypewriter exchange service. The new practice provides that law enforcement agencies subscribing to such service may transmit messages for another such agency to any other law enforcement agency.

The order states that "the change provides for the requirements of the law enforcement agencies, for a rapid and orderly means of exchanging information with another agency."

USITA Issues New Booklet on Dial Conversion Procedures

The United States Independent Telephone Association has published a booklet (price, 30 cents) entitled "Outline of Dial Conversion Procedures for the Small Company," which was prepared by a special sub-committee of the USITA Plant Committee, consisting of the following: G. William Miller of Rochester, N. Y., chairman; Frank S. Barnes Jr. of Rock Hill, S. C.; Ray Blain of Falls Church, Va., and John A. McKinzie of Lincoln, Neb.

USITA Plant Committee members are: Herman P. Siebken of Madison, Wis., chairman; Mr. Barnes; George P. Barney of Lincoln; B. C. Burden of Lincoln; W. M. Driggs of Chicago; Clayton E. Howden of Rochester, N. Y., and George B. Quatman of Lima, O.

The booklet is intended to supplement one entitled, "The Economic Aspects of Small Office Dial Conversion," published by the USITA in November, 1952.

Illinois Company Announces Two Changes in Personnel

R. S. Owen has been appointed new commercial manager for the Taylorville district of Illinois Consolidated Telephone Co., Mattoon, according to an announcement made on Feb. 20.

Mr. Owen, formerly local manager at Mattoon, will succeed Harold Jones, present district manager at Taylorville. Mr. Jones, who has held the Taylorville position since 1949, is being transferred to the general office at Mattoon, where he will become an assistant to the general traffic manager of the company.

Asks Increased Rates in Mo.

La Plata Telephone Co. recently asked the Missouri Public Service Commission for a $7,343-a-year rate raise.

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IN THE NATION'S CAPITAL

Concluded from page 18

reconciled or consistently stand together."

While this bill has purposes wider than labor relations, it might have helped the old Wisconsin utility anti-strike law if it had been on the federal statute books in 1951. Note also that the new bill is backed by the farm bureau and top-ranking southern Democrats. If legislators from big city states, where utility strikes are especially troublesome, were to add their weight to the farm bloc, such "home rule" legislation for state utility strike laws might have a real chance in this Congress.

Atom Power Package?

With all the headlines about atomic power submarines, surface ships, and possibly airplanes, the long-range effect of local atomic power package development on public utilities is worth some passing thought. Less than a half-dozen electric utility power company groups have, so far, made serious application to the Atomic Energy Commission (AEC) for atomic power plant licenses. The AEC is already building a plant of its own at Shippingport, Pa., which will eventually feed power into the public utility lines around Pittsburgh. A smaller AEC pilot plant is already feeding some power into upper New York State electric utility lines near Schenectady.

It is generally assumed, however, that atom-powered plants will be producing electricity for public service on a fairly regular and commonplace basis within the next five to 10 years. It also seems generally assumed that the atomic power plant, when so developed, will simply be another form of generating conventional electricity by heating water to turn generators, etc. In other words, uranium would simply be a substitute fuel (instead of coal or hydro) in the generating process. All the rest of the electric utility operating phases of transmission and distribution would remain the same.

But will this necessarily follow? Telephone companies, which have for many years been required to develop their own stand-by power reserve for emergency use, might take some passing interest in what the management consultant for a hotel chain told the Joint Congressional Committee on Atomic Energy, meeting in Washington, in mid-February. He said that Washington's (D. C.) Sheraton-Park Hotel was looking into the possibility of a low-power atomic reactor to supply it with light, heat, and air-conditioning power.

Elliott Earl, Manchester, Conn., informed the joint committee that "there is an awful lot of baloney being built up in connection with atomic power reactors. As far as I am concerned they are another kind of boiler." He said the Sheraton Corp. is planning a "formal and detailed case study" on a package-type reactor for its local hotel and intends to establish an "Institute for Atomic Technicians" to hold lectures on the subject.

Last week, Rep. W. Sterling Cole (R., N. Y.), a member of the joint committee, introduced a bill for a study on the feasibility of installing an atomic reactor in the United States Capitol Building to take care of its power needs. Another witness before the joint committee, Clyde T. Ellis, general manager of the National Rural Electric Co-operative Association (NRECA), declared "the United States has no civilian atomic energy program worthy of the name . . . other nations, including Russia, have achieved world leadership in atomic energy development."

It is hard to understand where the head of the NRECA gets, or has, his sources of information about Russian progress which do not seem to be available to our State Department or other experts. But aside from NRECA's blast, the idea of local package development of an atomic power unit is a challenging thing. It may be the cloud, no bigger than a man's hand, on the horizon of the electric utility industry. If local package power units can be developed for hotels, large commercial and heavy local industrial customers, the structural organization of the central station electric utility industry, as we now know it, might be in for some serious changes in future years.

11,000 Florists Agree to "Flowers by Telephone"

Almost 11,000 florists—90 per cent of those interviewed to date in a "Flowers by Telephone" campaign — have agreed to use long distance service in placing their out-of-town orders, says the Long Lines Department of American Telephone & Telegraph Co.

Launched last October, the program is being sponsored by all local Bell telephone companies, the Long Lines Department of AT&T and the United States Independent Telephone Association.

The sales effort, to promote the use of the telephone by 18,000 retail florists, was first initiated with the two largest florists organizations handling intercity orders.

Florists not yet contacted probably will be reached during the first three months of this year, according to W. A. Garrett, Long Lines' sales engineer. Member companies of the United States Independent Telephone Association and local Bell companies are working together to complete the interviewing.

Mr. Garrett, adds:

"The floral industry tells us they expect to handle about 14 million intercity orders this year. This will be an increase of about 3 million over last year, and they feel that the individual promotional efforts of the florists are being enhanced by this "Flowers by Telephone" campaign.

"Flowers by Telephone" promotion is expected to be a continuing activity, Mr. Garrett said. He noted that later this year "Flowers by Telephone" exhibits will be arranged for the national florist conventions.

O. R. Roach Retires As Gary Group Engineer

O. R. Roach is retiring from the Gary Group of telephone companies as consulting engineer.

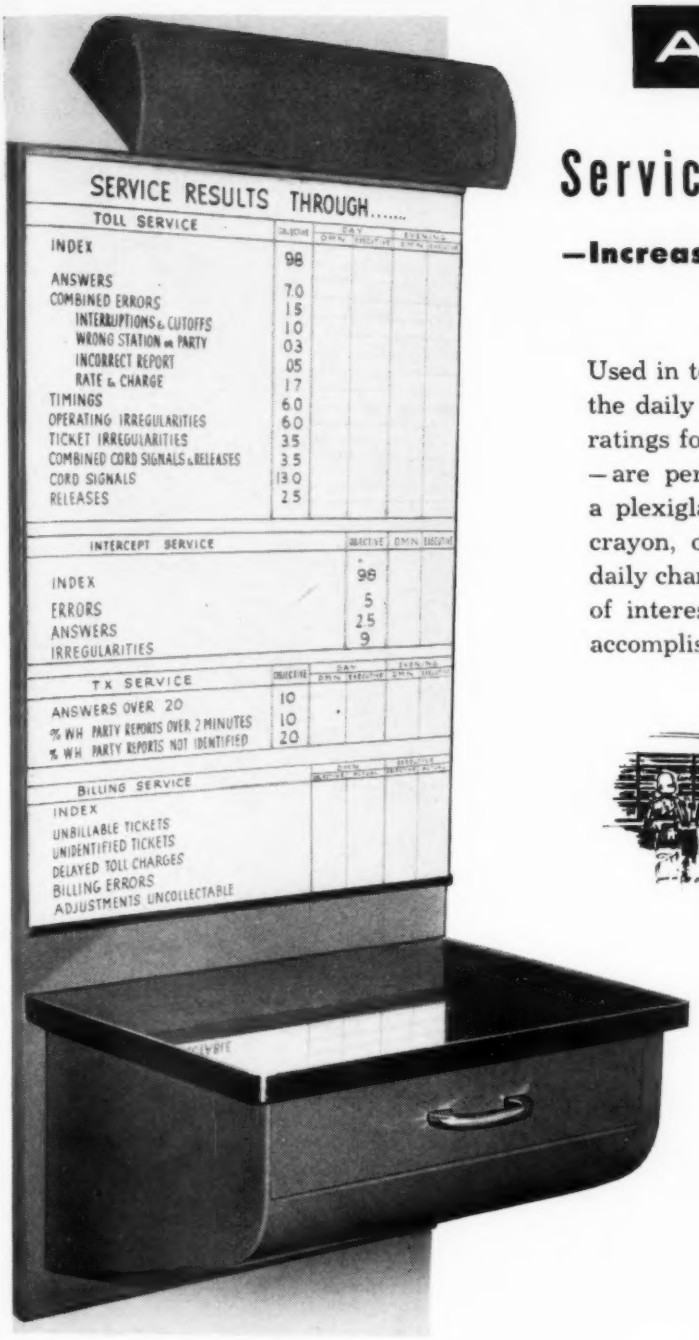
He has had quite a long period of service (46 years) in the field of telephone plant operations. He started with the Southwestern Bell Telephone Co. at Oklahoma City, and worked for a period of 23 years in all five states of Southwestern Bell territory. His duties during this period were broadly: student engineer, engineer, toll plant engineer, plant engineer for Kansas and later Oklahoma, plant supervision for Texas, and finally division plant superintendent for the southeast Texas division, with headquarters at Houston.

In 1932 Mr. Roach joined the Gary Group and became general plant superintendent for four companies in Illinois, and in 1945 moved to Fort Wayne, Ind., and became a consulting engineer. His duties were those of an engineering consultant largely with the Continental Telephone companies, the Community Telephone companies and the Middle States Utilities companies, covering areas in 17 states.

Mr. Roach plans to continue to do consulting work for various Independent telephone companies. He has bought a home in Fort Smith, Ark., at 2307 S. 23rd St., and plans to work out of Fort Smith.

Need For Incentive

"Business men in America always have accepted risk as part of the price of freedom, and part of the price of successful business operations. But nobody willingly is going to take risks unless there is a good reason, a strong incentive, for doing so."—Fairmont (W. Va.) *Monongahela News.*



ACME VISIBLE

Service Results Display Board

—Increase operator efficiency

—Improve service

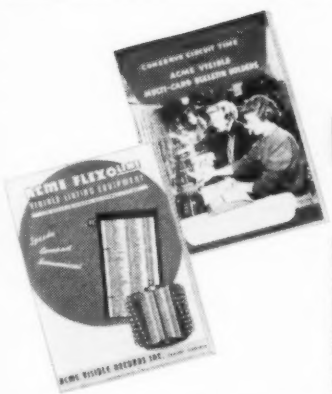
Used in telephone exchange operating rooms to record the daily efficiency attained by the various shifts. The ratings for different classifications—*the desired ratings*—are permanently listed on a card or sheet behind a plexiglass face. *Actual ratings* are posted in water crayon, on the plexiglass, and are easily erased for daily changes. This attractive unit becomes a focal point of interest graphically portraying the grade of work accomplished by various shifts, etc.

EASY TO INSTALL

Furnished complete with fluorescent lamp, shelf and drawer. May be fastened on wall, post or any flat surface.

EASY TO MAINTAIN

The plexiglass face protects the permanent classification sheet and permits quick, easy entries and erasures of changing data.



Here are two informative booklets, illustrating and describing various units, for telephone companies. ***Send for your copies today.***

ACME VISIBLE RECORDS, INC. CROZET, VIRGINIA

District Offices and Representatives in Principal Cities

T3-3-56

ACME VISIBLE RECORDS, INC., Telephone System Division, Crozet, Virginia

Please send us illustrated booklet

☐ #994 on Acme Multi-Card Bulletin Holders ☐ #982 on Acme Flexoline for Telephone Companies

☐ Have representative call. Date ..... Time .....

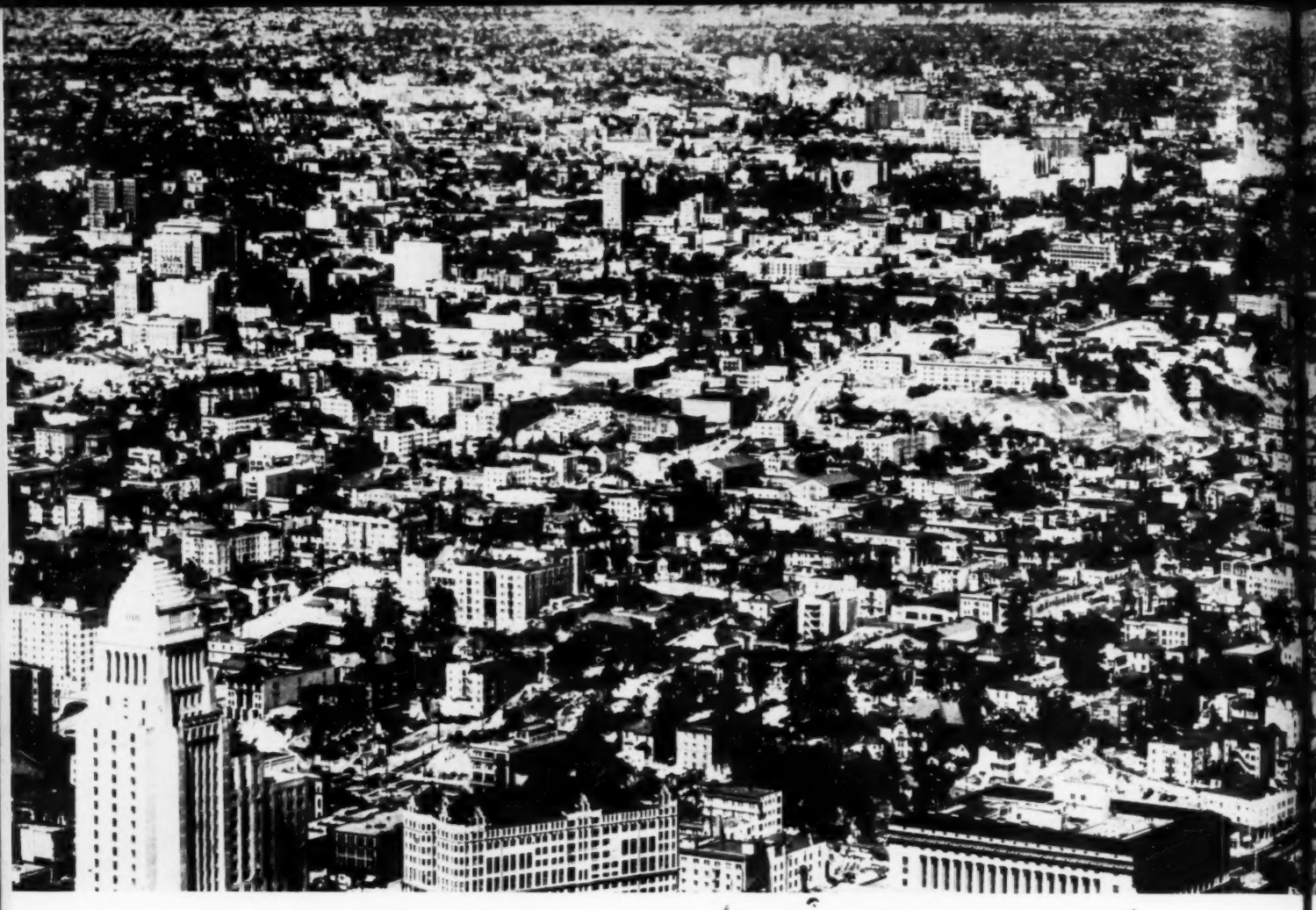
☐ We are interested in Acme Visible equipment for ..... records.
KIND OF RECORD

Company ..... Attention .....

Address .....

City ..... Zone ..... State .....

XUM



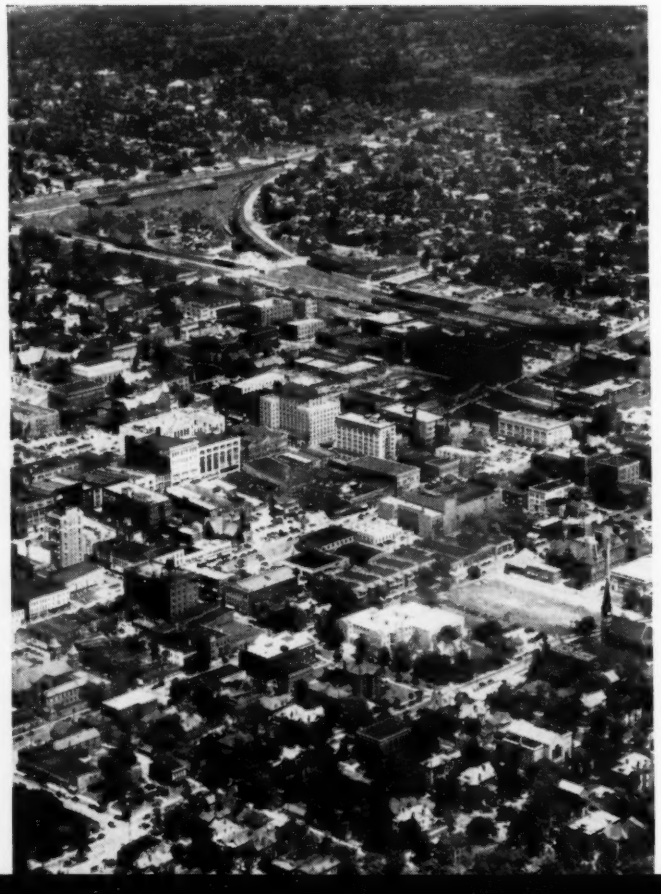
Four types,
to meet <u>all</u> needs!

for the metropolitan network using directors, SATT Type "A": Director selects regular or alternate route for traffic to neighboring areas; call is automatically extended to called party. Subscriber making short-haul call dials only the called party's directory number; calling station directory number is automatically identified—on up to five-party lines.

for the large central exchange or medium-sized multi-office network, SATT Type "B": Includes Transender (register-translator-sender). Subscriber dials "access code" of two or three digits, then simply dials called party's directory number (or area code *and* directory number, on long-haul calls). Calling station directory number is automatically identified—on up to ten-party lines.

for smaller systems where no operators are available, SATT Type "C": Subscriber dials SATT "access code," his own directory number, and called number. Calling station directory number is automatically verified.

for smaller systems where operators are available, SATT Type "D": Subscriber dials only SATT "access code" and called number. Operator asks his number and then records it in SATT Ticketer. SATT then extends call automatically.



Strowger Automatic Toll Ticketing provides automatic short-haul toll ticketing *now*—with equipment that may readily be expanded to provide for nationwide customer toll dialing when it comes. SATT owners face the future confidently; they *know* their investment is safe.

SATT:

"sized" for you, easily readied for nationwide customer dialing

"We've planned for the future!" That's the confident outlook purchasers of Strowger Automatic Toll Ticketing take toward nationwide customer toll dialing. Their equipment is planned so that it may readily be expanded to meet its requirements without extensive alterations; they *know* their investment is safe!

Why? Because all SATT systems employ the same *basic principle*—providing for storage, translation, and re-transmission of dialed information either in the initial installation or at any time in the future. Thus, they can be easily expanded when it is required to translate area and exchange codes into routing "directives" (consisting of regenerated pulses of any kind needed) to select regular or alternate routes to control switching points (csp) of the nationwide customer toll dialing network.

There's a SATT system that's just right for *your* toll operating requirements. SATT has been operating successfully for years with step-by-step, panel, and crossbar networks in California and Illinois—so when you specify SATT you know you're buying equipment thoroughly proved in actual commercial use! Whatever your problems in toll ticketing, you may be sure we've already met them! Write for informative Circular 1809T today. Address: *Automatic Electric Sales Corporation, 1033 W. Van Buren St., Chicago 7. Or, call HAymarket 1-4300.*

AUTOMATIC ELECTRIC

ORIGINATORS OF THE DIAL TELEPHONE

GENERAL SYSTEM INDEPENDENT

Bell Earnings Increase in 1955; Gains 2,880,000 Telephones

BELL SYSTEM earnings on American Telephone & Telegraph Co. stock were $13.10 a share on the average number of shares in 1955, President Cleo F. Craig said in the company's annual report, mailed to 1,409,000 share owners on Feb. 21.

Return on invested capital was 6.8 per cent, compared with 6.2 per cent in 1954, when earnings were $11.92.

The 1955 earnings of $13.10 per average share were $4.10 greater than AT&T's dividend payments of $9.00.

"With the increase of nearly 6 million shares during the year, $2.18 of this was needed to keep the amount of earnings retained in the business for each share of stock the same at the end of 1955 as at the end of 1954. Hence $11.18, or more than 85 per cent of earnings, was required to pay dividends and maintain the retained earnings protecting each share. Less than 15 per cent was available to increase retained earnings per share. These are still quite low and needed strengthening in a good year like 1955 if we are to make prudent provision for future years when business conditions may be less favorable," Mr. Craig stated.

"Earnings improved with the unprecedented prosperity of the nation. They reflected our participation in a rapidly expanding economy. Vigorous promotion of telephone services contributed much to our financial progress," the AT&T president said. He continued:

"We obtained 1.2 billion dollars of new capital to expand and improve service. Most of this came from the sale of convertible debentures and their conversion into stock. The earnings retained in the business are also important in providing funds for construction. Without this money, we should have to raise even more capital and spread our earnings over an even larger number of shares."

Bell System operating taxes were over 1 billion dollars, an increase of 156 million dollars over 1954. Operating taxes equalled $19.92 per share of AT&T stock. Federal excise taxes paid directly by telephone users were 435 million dollars, or 35 million dollars less than in 1954. This decrease reflects the reduction in excise tax rates by Congress on Apr. 1, 1954. Total Bell System taxes on telephone service averaged $2.75 a month per telephone.

AT&T share owners increased 102,000 to a total of 1,409,000. This is 2½ times the number of share owners in any other company, and the 1955 increase was larger than in any other company.

The Bell System added 2,880,000 telephones, nearly half again as many as in 1954. Long distance conversations went up 12 per cent. To meet the public's needs the system invested more than 1.6 billion dollars in new and improved facilities.

Bell System companies made further strides in providing more complete and convenient service. Additional telephones in homes that already had one or more instruments increased about 875,000 — almost double the gain in 1954. These extensions in bedrooms, kitchens, farm buildings and other locations now total nearly 4,450,000. Bell companies also installed nearly a million colored telephones in 1955.

Households in Bell companies territories served by individual lines increased to 10.4 million. The companies added another 325,000 telephones in rural areas, bringing their postwar gain in these areas to 3 million.

Bell companies also changed 350 more offices to dial operation. Nearly 87 per cent of all 46,200,000 Bell telephones are now dial-operated. Long distance operators dial three of every five calls they handle straight through to the distant telephone. In 65 places, compared with 25 a year ago, users themselves dial directly to many distant points.

Western Electric Co.—the manufacturing and supply unit of the Bell System—delivered about 30 per cent more telephone cable, 52 per cent more automatic central office equipment, and 48 per cent more telephones than in 1954.

Two-thirds of all equipment produced by Western is of types developed within the past 10 years.

Closing the report's service summary, Mr. Craig paid this tribute to the 745,000 men and women who work for Bell System companies:

"Again in flood, hurricane and other emergencies, Bell System men and women did a splendid job. And in every day's work, it is always the skill and spirit of telephone people that make good service. Both will count in the even larger undertakings we see ahead in 1956."

Bell System Statistics

	1955	1954
Earnings on Capital	6.8%	6.2%
Operating Revenues and Other Income	$5,390,936,000	$4,867,897,000
Operating Expenses and Taxes	$4,576,053,000	$4,172,642,000
Interest Deductions	$ 131,339,000	$ 130,356,000
Net Income	$ 683,544,000	$ 564,899,000
AT&T Shares—Average for Year	50,706,000	46,148,000
Number at Year-End	54,116,000	48,162,000
Net Income per Average Share	$13.10	$11.92
Total Retained Earnings per Share at Year-End	$19.99	$18.19

EFFECT OF 1955 EARNINGS OF $13.10 PER AVERAGE SHARE

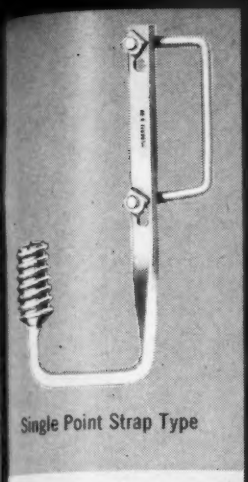
To Pay Dividends	$9.00
To Prevent Reduction in Retained Earnings per Share as Shares Increased	$2.18
To Increase Retained Earnings per Share	$1.92
On the Larger Number of Shares at Year-End This Equaled	$1.80

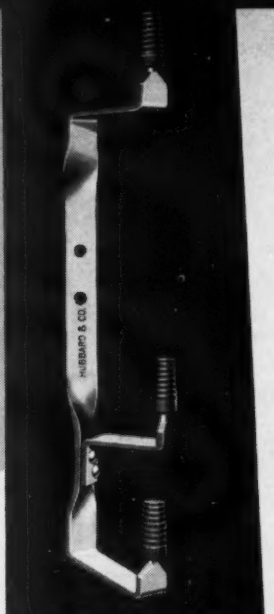
. . . bringing total retained earnings per share from $18.19 at the end of 1954 to $19.99 at the end of 1955.

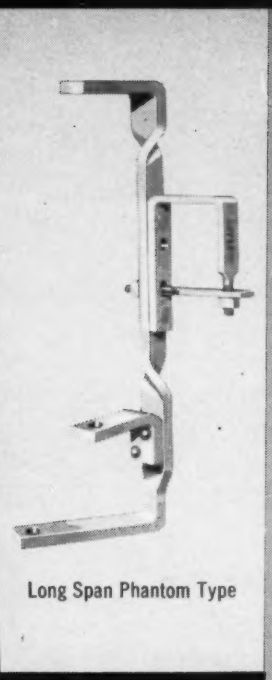
Okla. Company to Disband In Favor of New Company

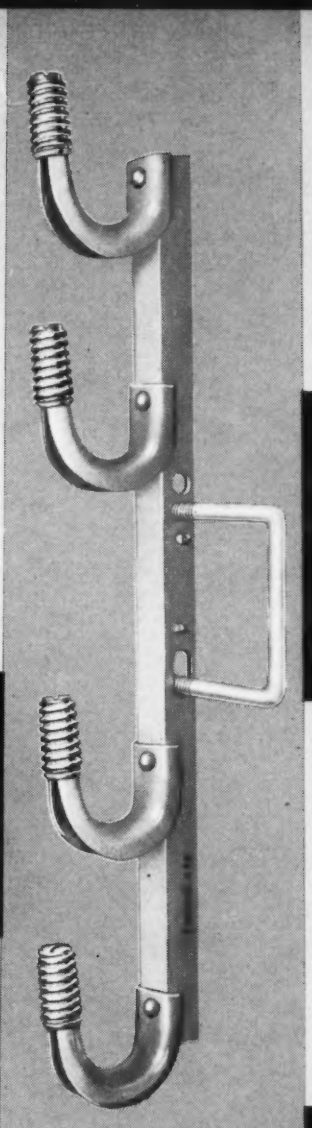
Stockholders of the Braman (Okla.) Mutual Telephone Co. recently voted to disband their organization in favor of a new exchange, the Harper County Telephone Co., which will build an automatic system for residents to be completed within 18 months. The new system will be built with funds borrowed from the Rural Electrification Administration.

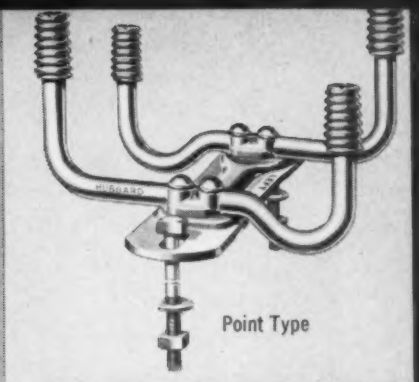
At the meeting, the stockholders voted to give Zelyth McMasters, the operator, the present telephone property as a gesture of thanks for her many years of faithful service.

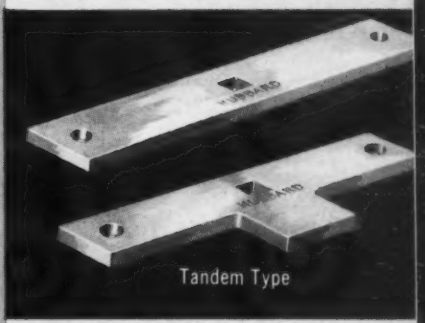

Single Point Strap Type

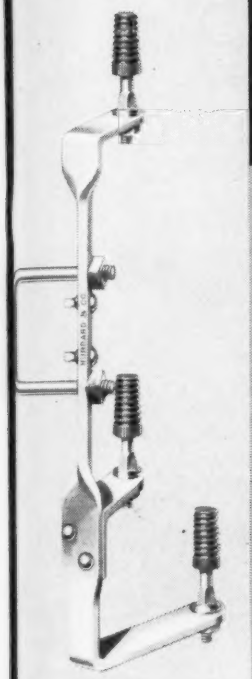

One Piece Phantom Type

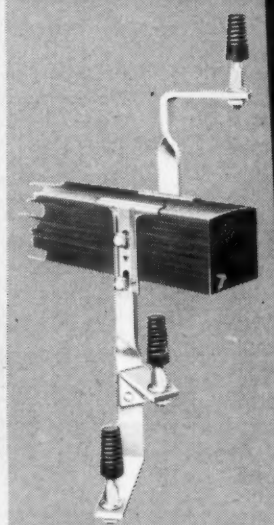

Long Span Phantom Type


Multipoint Type

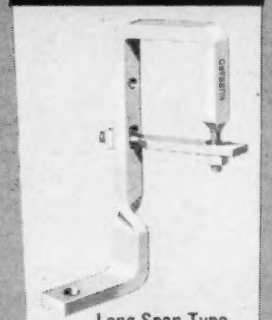

Point Type

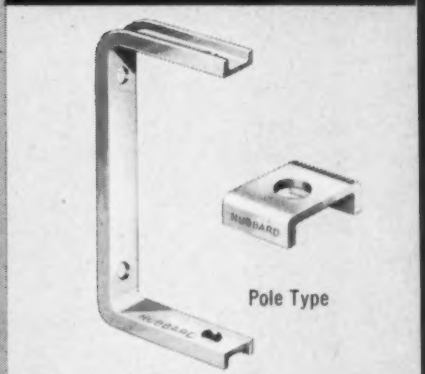

Tandem Type


Phantom Pin Type


Two Piece Phantom Type

Standard Telephone Type


Long Span Type


Pole Type

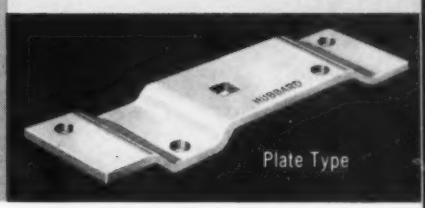


Plate Type

TRANSPOSITIONS? Hubbard has them!

No matter what your transposition problem, there is a Hubbard Bracket specifically designed to fit the job. From the standard under arm single circuit style to the newest precisely balanced point types, Hubbard transposition brackets are easy to install, give low cost, trouble-free service under the most adverse operating conditions.

Hubbard's complete line of Hardware for the Telephone Industry is carried in stock nationally by more than 300 distributors . . . men whose business it is to know and service local needs. Call your Hubbard distributor for his help and assistance on your line construction and maintenance problems.

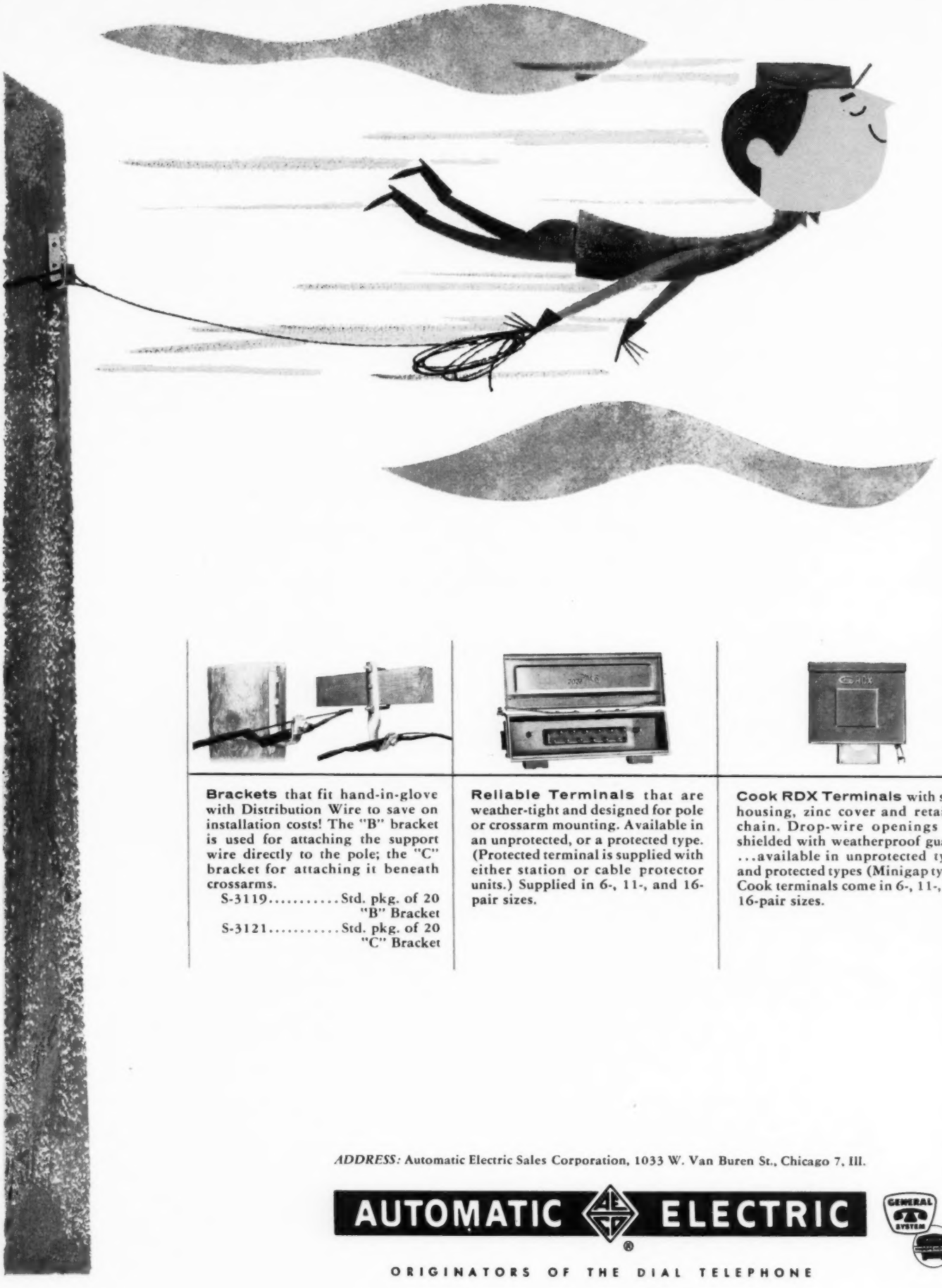
HUBBARD AND COMPANY

Pittsburgh 1, Pa.
Chicago 50, Ill.
Oakland 8, Calif.

OVERHEAD: Cable Suspension Material • Wireholders • Pole Seats and Balconies • Clevises • Braces • Drive Hooks • Messenger Dead Ends • Extension Arms • Long Span Material • Pins Clamps • Guards • Stubbing Bands Guy Protectors • Guy Clamps • Pole Struts • Clips • Straps • Hangers • Carriage Bolts • Transposition Brackets Eye Bolts • Pole, Corner and House Brackets • Guy Hooks • Strain Plates Storm Guy Straps • Pole Steps • Lags Machine and Hubeye Bolts • Sidewalk Guys • REA Telephone Hardware

UNDERGROUND: Cable Racks • Manhole Ladders and Steps • Pulling-in Irons • Expanding Anchors • Cable Shields • Screw Steelwing Anchors Anchor Rods • Ground Rods and Clamps

XUM



Brackets that fit hand-in-glove with Distribution Wire to save on installation costs! The "B" bracket is used for attaching the support wire directly to the pole; the "C" bracket for attaching it beneath crossarms.

S-3119.....Std. pkg. of 20 "B" Bracket

S-3121.....Std. pkg. of 20 "C" Bracket

Reliable Terminals that are weather-tight and designed for pole or crossarm mounting. Available in an unprotected, or a protected type. (Protected terminal is supplied with either station or cable protector units.) Supplied in 6-, 11-, and 16-pair sizes.

Cook RDX Terminals with steel housing, zinc cover and retainer chain. Drop-wire openings are shielded with weatherproof guards ...available in unprotected types and protected types (Minigap type). Cook terminals come in 6-, 11-, and 16-pair sizes.

ADDRESS: Automatic Electric Sales Corporation, 1033 W. Van Buren St., Chicago 7, Ill.

AUTOMATIC ELECTRIC

ORIGINATORS OF THE DIAL TELEPHONE

distribution wire goes up fast!

That's right! In one swift operation, you can put up six pairs of General Cable Distribution Wire. All six are in a light, easy-to-handle group that's formed like a cable, yet requires no lashing because the conductors are wound around a plastic insulated, steel support wire.

Distribution Wire comes in three conductor sizes: Rural (19 AWG), Suburban (22 AWG), and Urban (24 AWG)...you can order all sizes in 2000 or 4000 ft. reels.

DISTRIBUTION WIRE PAIR SIZES ARE:

Rural.....1-, 2-, 3-, 4-, 5-, 6-, 11-, and 16-pair
Suburban.....11-, 16-pair
Urban.....11-, 16-pair

these work-speeders make the job even faster:

Special Plastic Guards protect wire where it rubs against brackets. Guard is 8" long...slit full-length along the side.

S-4522
½"...(1 to 6-pair)
S-4524
¾"...(11 to 16-pair)

Wirelink (left) splices the wire core in a never-relaxing, steel-jawed grip. Merely insert the wires in the ends 'til you hear a click.

The Wirevise (right) uses the same principle for dead-ending the core; bail is assembled easily around insulators and thimble eyes.

S-7966.....Wirelink
S-7969.....Wirevise

Nicopress Sleeves that speed splicing and tapping. Conductors are joined easily with the S-7036 or S-6986 sleeve...and for fast, efficient tapping-off there's the S-6832 Nicotap sleeve and the *new* S-7089 straight, split, tap-off sleeve. With *either* sleeve there's no need to cut the line—they're split so they'll slip over the wire! (All sleeves may be crimped with 17-2 tool.)

S-6832...17, 18, 19, AWG to 17, 18, 19 AWG
S-7089...19, 22, 24 AWG to 17, 18, AWG
S-7036...19, 22, AWG Copper (For Splicing)
S-6986...24 AWG Copper (For Splicing)

AUTOMATIC'S 5 WAREHOUSES

CHICAGO—HAymarket 1-4300
JOHNSON CITY, N.Y.—BInghampton 7-8507
RICHMOND—Tel. 6-9280
KANSAS CITY—HArrison 1-4720
PORTLAND, ORE.—CApitol 3-7244

XUM

General of Ohio Conducts Human Relations Workshops

General Telephone Co. of Ohio, Marion, is conducting a series of five human relations workshop conferences throughout the state for the company s traffic supervisors.

The first of the series was held in Jackson, on Feb. 21 and 22. Other two-day conferences will be held in New Philadelphia, Georgetown, Marion, and Celina.

Robert E. Coffman, general traffic manager, is directing the series. Assisting him are Norman R. Weston, general traffic engineer, and Mrs. Phyllis J. Ziegler, general traffic analyst.

The purpose of the conferences is to develop and improve techniques for handling the many facets of human relations associated with the administration of the company's 135 offices. The program involves lectures on various human relations subjects, and includes case discussion periods and skits directed at improving everyday job relations. Mr. Coffman pointed out that the training aims to develop a skill rather than to provide stock answers to human relations questions and problems.

Traffic supervisors of General Telephone Co. attending the Jackson meeting were Cora Mae Joachim, Mrs. Patricia Bauer, and Mrs. Dorothy Roberts of Jackson; Margaret Anderson of Wellston; Jane Nunley of Waverly; Dorothy Jenkins of Pomeroy; and Mrs. Mary Nuetzling of Middleport.

Attending as guests were five Ohio Consolidated Telephone Co. traffic supervisors from Portsmouth. They were Thomas Winn, Mrs. Peggy Campbell, Mrs. Deris Beckman, Mrs. Ina Webb, and Mrs. Helen Evans.

Operator Calls 22 Firemen In Bid to Save Own Home

The presence of mind of Mrs. Audrey Cox, switchboard operator at the Clinton, Ill., exchange of Illinois Central Telephone Co., in a fire emergency involving her home, was reported as follows in the local *Pantagraph:*

"A Clinton telephone operator remained at her switchboard early Sunday while fire raced through the major part of her home in another part of town.

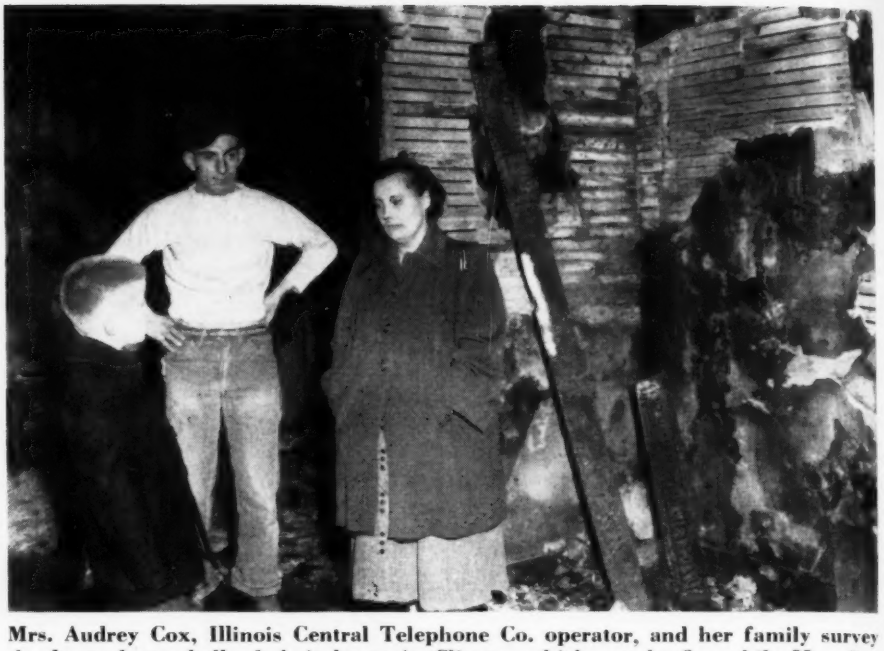
"The alarm came to Mrs. Audrey Cox, alone at the switchboard, at 2:50 a.m.

"The woman's voice said to send the fire department to 1129 E. Main.

" 'I knew that was my home,' said Mrs. Cox.

" 'And I said, "Oh, that's my house."

"She recognized the voice of her next door neighbor, Mrs. Harry Blossom.



Mrs. Audrey Cox, Illinois Central Telephone Co. operator, and her family survey the burned-out shell of their home in Clinton, which caught fire while Mrs. Cox was on duty. She sounded the city hall fire siren and rang each of Clinton's 22 volunteer firemen before asking to be relieved from the board.

" 'Oh, is that you Audrey?' asked Mrs. Blossom. 'Send the firemen quickly.'

"Mrs. Cox sounded the fire siren on the city hall and then rang each of Clinton's 22 volunteer firemen before she called her chief operator to be relieved from the board.

"Mrs. Cox had taken her two small sons to the home of a relative before going on duty at 8 p.m.

"Her husband, Loren, was asleep when the fire started but escaped through a window. The family bought the home in October.

"Their furnishings are a total loss."

Nebraska Co-op Members Vote to Merge with LT&T

Members of the cooperative Speiser (Neb.) Telephone Co. voted 54 to 27 on Feb. 14 to become a part of the Humboldt exchange of The Lincoln Telephone & Telegraph Co. A written ballot was taken at a stockholder's meeting at Humboldt (TELEPHONY, Jan. 21, p. 47).

The Lincoln company agreed to furnish and install station wiring and telephone instruments and to extend adequate cable facilities approximately 3 miles south of the Humboldt exchange. The company will also provide at cost, plus a 10 per cent supply and warehousing expense, the necessary materials for rebuilding lines to LT&T specifications.

Speiser patrons agreed to furnish the labor necessary to rebuild lines and to put up approximately $100 in cash per customer to pay for line materials. LT&T will provide a foreman to direct the rebuilding operations, and tools and equipment will be loaned for this purpose.

The Speiser company appointed 18 team captains to solicit funds on the 18 Speiser lines. The money collected will be put in escrow until final arrangements are completed. If the money is raised and the labor pledged, the merger will go ahead as planned. This would add about 125 rural customers to the Humboldt exchange.

USITA's L. F. Roberts Gives Press Club Luncheon

A luncheon honoring Frank Holeman, Washington correspondent of the New York *Daily News,* recently inaugurated president of the National Press Club of Washington, D. C., and Lucian C. Warren of the Buffalo (N. Y.) *Courier-Express,* retiring president, was given recently by Leon F. Roberts, director of information of the United States Independent Telephone Association.

Others present included Francis X. Welch, editor of *Public Utilities Fortnightly* and Washington editor of TELEPHONY; Roland C. Davies, editor of *Telecommunications Reports* and Washington editor of Telephone Engineer Publications; Frank Fortune, correspondent of the Buffalo (N. Y.) *Evening News;* and James Ellis, publication manager of the National Automobile Manufacturers Association.

Collective Bargaining Needs

"There is no collective bargaining substitute for patience, intelligence, and common sense." — GUY FARMER, *chairman, National Labor Relations Board.*

EVERYBODY'S TALKING ABOUT THE NEW PICTURE GRAPH—

the complete 5-minute explanation of the Remington Rand Simplified Revenue Accounting Plan for the Independent Telephone Company!

Now, ready at last, is a concise, lucid, and complete Picture Graph of the Remington Rand Simplified Revenue Accounting Plan that's already causing so much favorable talk in the independent telephone field. With this new illustrated Picture Graph, it will take you only minutes to learn the *full* story from beginning to end . . . the *how* and the *why* of this revenue accounting plan that's custom made for independent telephone companies. You'll learn *how* it works, and works so well, and *why* it will give you:

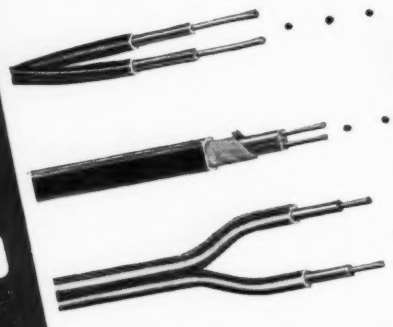
1. Faster and more accurate billing
2. Increased subscriber satisfaction
3. Reduced operating costs

Write today for your free Picture Graph of the Simplified Revenue Accounting Plan for the Independent Telephone Company. Ask for X1618 when you address Room 2400.

Remington Rand
DIVISION OF SPERRY RAND CORPORATION
315 Fourth Avenue, New York 10, N. Y.

All-star cast of line supplies

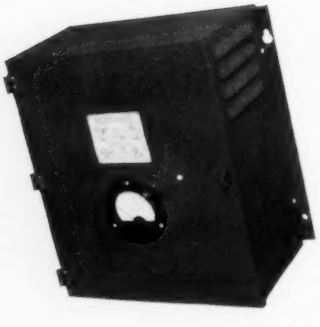
featured by KELLOGG



Afraid of Winter? Keep your lines in action—your maintenance costs down, with DIAMOND WIRE & CABLE CO.'S RED-D Drop Wire. Superior adhesion, conductivity, tensile strength. Available in Copperweld and Signal Bronze.

Extra-Life Telephone Battery—PlastiCal (lead calcium grids) have expected life of 25 years in full-float service. Plasti-Cell (high tensile special alloy grids) have a life expectancy of 14 years. Made by C&D BATTERIES, INC.

More Holding Power—Less Load Per Blade!—The Chance 8-Way Anchor distributes the load all the way around the hole. Expands to form a complete pyramid shaped square. Made in sizes from 60 to 200 square inches in area. Made by A. B. CHANCE COMPANY.



The New RectiRinger consists of a time-tested Raytheon Rectifilter to supply humless, regulated DC power for the switchboard, and an adaptation of an exclusive saturable core reactor to supply 20 cycle ringing power. Made by RAYTHEON MFG. CO.

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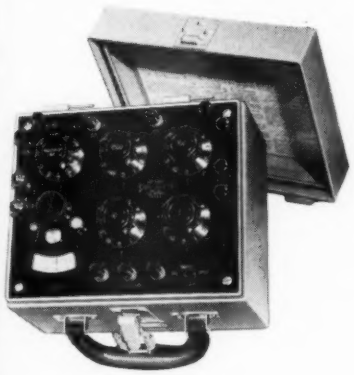
Designed for Maintenance-Free Operation — The Cook P-L-X Cable Terminal requires no stubbing, splicing nor potting. Only plastic loop cable terminal that can be protected. When ordering, specify cable size (6 thru 51 pair). Made by COOK ELECTRIC CO.

The Time-Tested Steel Strand. A ductile, adherent zinc coating applied by the famous Crapo Galvanizing Process, provides lasting protection against corrosion in INDIANA STEEL & WIRE CO.'s Crapo Steel Strand. Minimum maintenance expense.



Shallcross #6100 Wheatstone Bridge — This portable instrument is designed to measure any resistance from 1 ohm to 1 megohm, locate grounds, crosses, opens and shorts by the Murray, Varley, Hillborn or Fisher Loop and Capacitance tests. Can be operated by repairman wearing gloves. SHALLCROSS MFG. CO.

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by C. J. Reynolds, Stromberg-Carlson Company

The few dollars you spend on *reliable* equipment today will be repaid a hundredfold in lower maintenance costs for years to come. Protect your investment with the double guarantee offered by Stromberg-Carlson. First, leading manufacturers build this equipment, and guarantee it. Second, because we recommend and sell this equipment to the telephone industry, we *also* guarantee its performance!

New Time Saver Terminal

When stringing plastic cable, the loop-through PLX Cable Terminal is the one to use.

The Cook PLX Cable Terminal for plastic cable.

It's the easiest to install, most economical terminal made. No stubbing—the cable is looped in and out. No splicing—the cable is continuous right through the terminal. No potting—just put a Neoprene grommet in place and secure. These features mean time saved, and time saved is dollars in your pocket.

Made with a heavy galvanized steel frame and cable chamber by Cook Electric Company, it utilizes the famous XB Bakelite faceplate.

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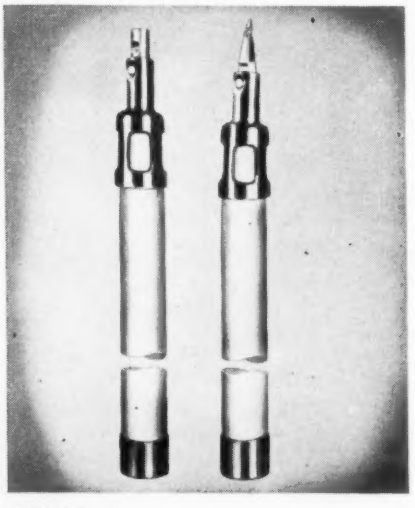
Maplac*, the transparent plastic finish used on Chance Hot Line Tools, has been indorsed with popular acclaim by linemen and management alike.



SAFETY PIKE

At left, point is reversed for safety in transporting. *At right,* pike pole is ready for business.

And now—this tough, moisture-resistant plastic protection is being applied to Chance Pike Poles, greatly increasing their service life and adding to their safety.

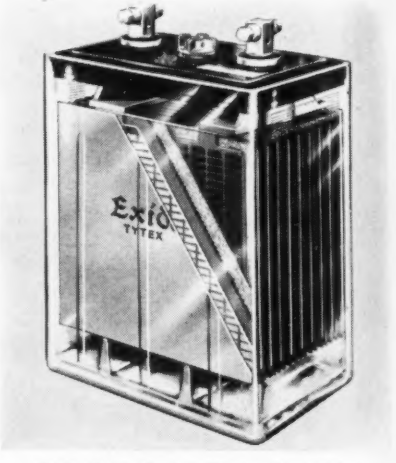
Splintering of the wood poles is eliminated, preventing lost time hand injuries. *Trade Name

Taper-less battery saves space

How would you like to pack more power in less floor space?

The essential feature of the Exide Tytex Battery is the manner in which the element is held together in a strong compact unit. This feature has been achieved by assembling its element in a molded glass jar having no taper in its vertical sides . . . thus more power in less space.

Among other features of the battery are the balanced positive and



Exide Tytex Battery has vertical sides.

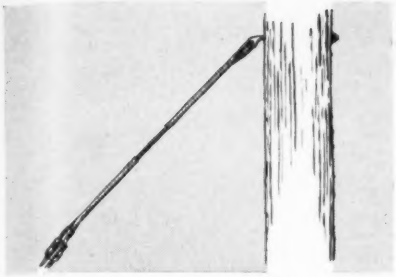
negative plate design which, together with the use of Mipor separators and Vitrex retainers, contribute to long battery life, less weight per ampere hour output and more attractive looking cells which improve the appearance of the installations.

Cut labor costs 50%, save 86c on each guy

How would you like to save as much as 50% of labor costs on guying? **And** save up to 86c on each guy strand, as well?

Preformed "Guy-Grips" eliminate the need for clamps, clips or loops, because each "Guy-Grip" provides its own loop-eye. This reduces the amount of strand you need. Total savings on a typical guy can go as high as 86 cents!

To install, almost all work is done on the ground — mostly by hand, using no special tools. You can often cut installing time in half!



You hold the full strength of the strand with this Preformed "Guy-Grip."

Lab and field tests show that "Guy-Grips" will not allow the strand to slip, and are so strong that they can hold the full rated strength of even Extra-High-Strength Steel Strand.

Noise can be money!

Take a business subscriber who has a telephone in some extremely noisy location—and who has finally decided to do something about it. Would you rather have him spend money in building a soundproofed booth—or give **you** the money as monthly income on a telephone which completely licks the noise problem?

The GAI-PHONE is such an instrument. It has a special transmitter that actually creates a "Zone of Quiet" around the handset—even in a spot as noisy as a boiler factory!

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Bell Has New Transistor with Unsurpassed HF Performance

A MAJOR achievement that opens up new possibilities in electronics was reported on Jan. 20 by Bell Telephone Laboratories.

Two articles in the January issue of the *Bell System Technical Journal* describe a major breakthrough in transistor technology—new fabricating techniques for an entirely new kind of transistor.

These techniques may have far-reaching effects on the use and manufacture of the tiny amplifier, especially for electronic applications in the telephone industry, but in other fields too.

The way is now open for the transistor to replace the vacuum tube in many telephone and television jobs.

The new device's performance at very high frequencies surpasses that of any other transistor. Development is under way preliminary to manufacture.

Key to the new fabricating techniques is the development of controls over microscopic chemical layers. The heart of the new transistor is a layer 50-millionths of an inch thick.

The new techniques involve the adaptation of the chemical process of "diffusion" used in treating silicon for the Bell solar battery, first device to convert sunlight into substantial amounts of electricity. Diffusion is a process by which minute amounts of impurities are introduced in controlled amounts into a material.

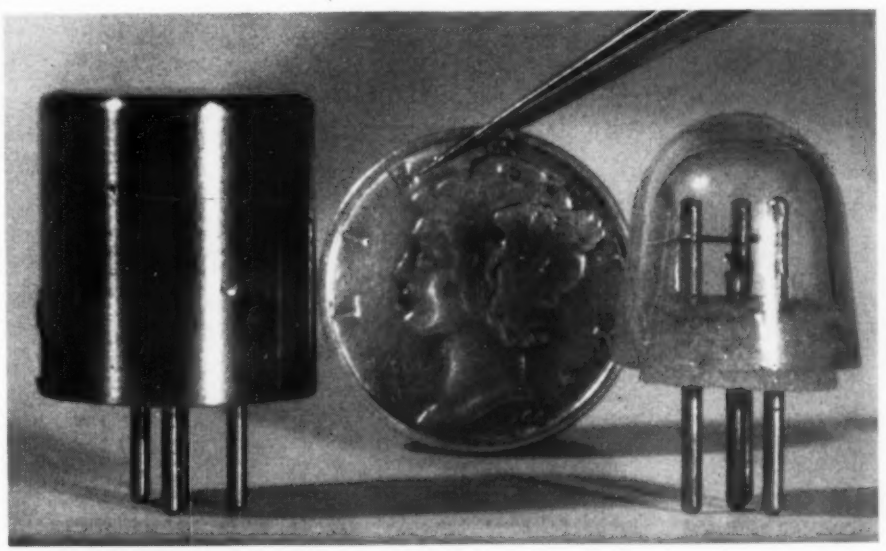
The transistor consists of a three-layer chemical "sandwich." The center layer is known as the "base." The other two are the emitter and collector layers. The narrower the base layer can be made the higher the frequency at which it will operate. Diffusion provides a high degree of control of such microscopic dimensions.

Because of its very high frequency characteristics the new transistor appears to be ideally suited for application in guided missiles and electronic "brains" for military and computer uses

Tradic, an electronic computer designed by Bell Laboratories for military application, already uses a transistor of a different type, and transistors are being used in other military equipment. While these transistors are well suited for the jobs they do, they cannot be used for a large number of other applications. The new transistor opens up many new possibilities for military technology.

Transistors have been used for several years in place of vacuum tubes as low frequency amplifiers in some areas in the telephone field and in industrial equipment.

The new transistor could amplify 2,500 telephone conversations simul-



Laboratory models of new silicon and germanium transistors announced by Bell Telephone Laboratories shown in comparison with U. S. dime. Silicon transistor, with brass cap, is at left and germanium transistor, with glass cap is at right. Models give only impression of what final transistors will look like; smaller units will eventually be manufactured. Performance of the new transistor at very high frequencies surpasses that of any other transistor.

XUM

taneously on a telephone line. This is three times as many as could be handled by the best previous transistor.

It is also expected to be extremely useful in television transmission, which requires a much wider communication channel than a telephone conversation.

Color television sets offer a possibility for the new transistor, too. Although vacuum tubes are now doing this job, the new transistor is much smaller, requires less power, and does not heat up like a tube. It is expected to have a longer life than a vacuum tube. The new device has been made of both germanium and silicon, with striking improvements in both.

C. A. Lee, of Bell Laboratories, is chiefly responsible for perfecting the techniques with germanium. C. S. Fuller and M. Tanenbaum have applied the diffusion technique in making the new transistor from silicon. William Shockley and George C. Dacey were instrumental in directing work that led to the development.

A Symposium on Diffused Semiconductor Devices for Bell System patent licensees was held at the laboratories Jan. 16 and 17. Three talks on the new germanium and silicon transistors were given. Talks on other semi-conductor devices were also given to representatives of some 60 licensed domestic and foreign companies.

The above new central office building was recently completed in Toccoa, Ga., for the Georgia Continental Telephone Co., J. H. Wright, company vice president has announced. Costing approximately $115,000, the structure consists of a three-quarter basement and first floor, totaling 7,024 square feet of floor space. It is completely air conditioned and will house 1,800 lines and 3,300 terminals of Automatic Electric Co. equipment together with a six-position toll switchboard equipped for operator distance dialing. Mar. 18 is the planned cut-over date, at which time approximately 3,000 stations will be served from the Toccoa exchange.

Louisiana Association Names New Officers

The Louisiana Telephone Association held its annual convention on Feb. 8 and 9 in New Orleans.

Speakers at the first session included Frank Newton of Atlanta, Ga., vice president of Southern Bell Telephone & Telegraph Co.; Charles R. Dupuy Jr., of Southern Bell's New Orleans office, and W. K. Boardman Jr., Southern Bell's Louisiana manager.

The second session was highlighted by talks by Nat B. Knight Jr., member of the Louisiana Public Service Commission; Hugh A. Barnhart, vice president of the United States Independent Telephone Association; Everett Weitzell of the Rural Electrification Administration; Eric Ludin of Southern Bell, and Granville Sewell, New Orleans advertising agency executive.

The following association officers were elected: President, William Yarno of Cottonport; first vice president, H. L. Mizell of Glenmora; second vice president, W. T. Henning of Sulphur; treasurer, A. M. Cobb of Jena, and secretary, John A. Brady Sr. of Golden Meadow.

Musical Tone May Replace Bell, Reports Bell Labs

Bell Telephone Laboratories reported Feb. 10 on experiments with a new musical tone device which may someday replace bells in Bell System telephones if it meets technical standards and customers' approval.

The first major field trial of the new device will take place in the Crystal Lake, Ill., area next spring.

The experimental site was selected for the variety of telephone equipment it affords. Some 300 customers on 100 telephone lines, ranging from one-party to eight-party rural service, will be asked to participate.

The musical tone equipment uses transistors. In this experiment the tones will be transmitted with the same amount of power required for a telephone conversation — considerably less than is needed to make a telephone ring. The ordinary telephone bell requires 85 volts; the transistorized device operates on less than a volt.

The experimental telephone sets in

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These Relay sets have already been installed in many leading communities for operation of Civilian Defense Alarms.

The SIGNAL Relay Set can be installed quickly and easily. It is designed to operate on standard telephone ringing current of 15 milliamperes at 90 volts, 20 cycles

The Telephone Ringing Relay Set has been proved in service and is of the same high quality which characterizes all relays, devices, and control systems built by the Signal Engineering and Mfg. Co.

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LONG BRANCH NEW JERSEY

This telephone set, displayed by a Bell Laboratories employe, contains the musical tone device, which can be heard clearly and at great distances. The tone radiates from louvered area at the base.

Crystal Lake will be almost identical in appearance with the latest models placed in service by the Bell System. The only apparent change in the set is a louvered section at the side of the base through which the sound is radiated. Alterations in the telephone central office at Crystal Lake and on telephone lines there will not affect the customer.

Limited field trials and laboratory tests already indicate some of the advantages of the musical tone. Reactions of a "jury" of men and women participating in laboratory tests showed that the musical tone can be heard at great distances. It stands out above general room noise and can be distinguished from such sounds as the ringing of doorbells, alarm clocks and fire alarms. Still it was judged to be a distinctive and pleasant sound.

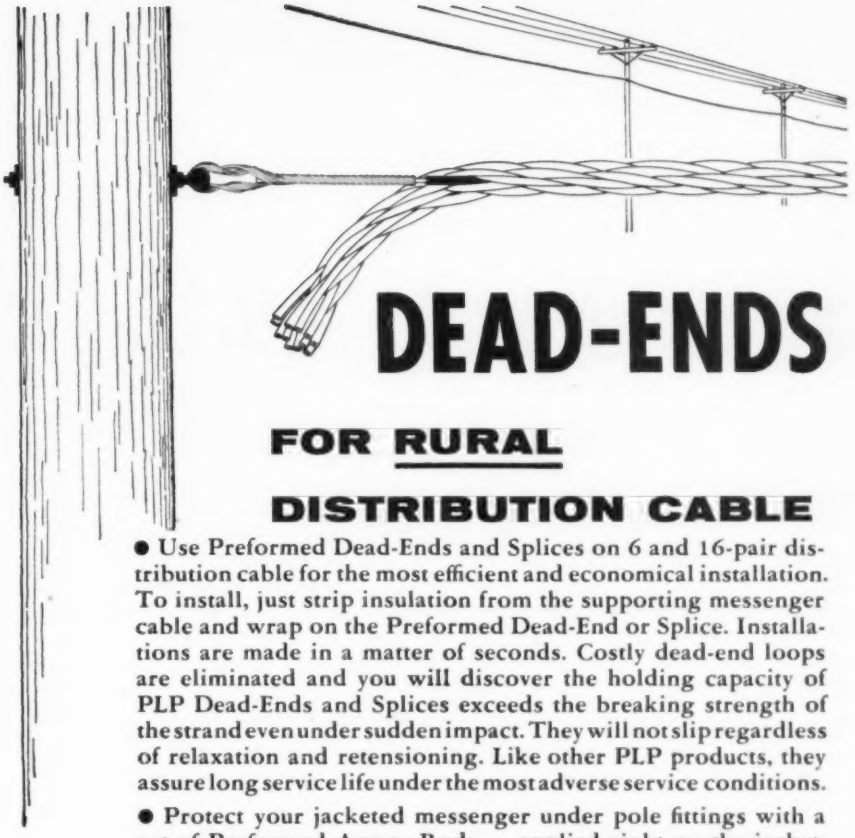
An advantage rated high by Bell scientists is that the new device is an aid to the partially deaf. This is because the musical tone contains more energy in the middle frequency range where there is ordinarily less loss of hearing acuity.

General of NW Announces Two New Plant Appointments

Orin C. Walter has been named plant instructor with General Telephone Co. of the Northwest, it is announced by Arleigh Q. White, general plant manager. The appointment became effective on Feb. 16.

The newly-created position is a promotion for Mr. Walter, who for the past eight years has been wire chief at the Wallace, Idaho exchange. He will operate out of the company's eastern division offices at Coeur d'Alene.

A native of Montana, Mr. Walter started with General as a groundman



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FOR RURAL DISTRIBUTION CABLE

● Use Preformed Dead-Ends and Splices on 6 and 16-pair distribution cable for the most efficient and economical installation. To install, just strip insulation from the supporting messenger cable and wrap on the Preformed Dead-End or Splice. Installations are made in a matter of seconds. Costly dead-end loops are eliminated and you will discover the holding capacity of PLP Dead-Ends and Splices exceeds the breaking strength of the strand even under sudden impact. They will not slip regardless of relaxation and retensioning. Like other PLP products, they assure long service life under the most adverse service conditions.

● Protect your jacketed messenger under pole fittings with a set of Preformed Armor Rods . . . applied right on the jacket.

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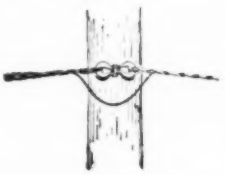

PREFORMED DEAD-ENDS AND TANGENT SUPPORTS

● Protect and hold new self-supporting cable with a firm elongated grip that distributes a low unit pressure over a large area . . . that eliminates damage to the conductor without permitting slippage.

PREFORMED GUY-GRIPS

● Assure the fastest, most economical and efficient means for dead-ending guy strand and messenger . . . do not slip under any condition—impact or intermittent loading. They are wrapped on the strand by hand without the aid of wrenches or compression tools. Easily removed for retensioning.

PREFORMED SPLICES

● Are used for new construction and for repairing damaged or broken strand . . . restores full strength to the strand.

PREFORMED LINE GUARDS

● Fit snugly without the use of clamps or clips. They guard against concentrated stresses and are ideal for protecting conductors from the abrasion by trees, buildings or other objects. A must for protection at tangent supports.

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● Reinforce the conductor and provide protection during the life of the line . . . eliminate wear and chafing, resist slippage and greatly reduce maintenance.

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in 1936, after graduating from Cooke School of Electricity, Chicago, and attending Kinman Business University in Spokane.

He was made an apprentice combinationman at Wallace in 1939 and transferred to Moscow as a switchboardman the following year. After six years in this capacity at Moscow and Farragut, Idaho, he was transferred to Coeur d'Alene as an automatic switchboardman. In January 1948 he was promoted to wire chief at Wallace, his position until now.

The appointment of Henry H. Williamson Jr., to the position of district plant supervisor at Kennewick was announced recently by Arthur B. Anell, central division manager of General of the Northwest. The appointment became effective Feb. 1.

Williamson was formerly located at Moscow, Idaho, where he held the position of chief equipmentman.

A native of Nihill, Mont., Mr. Williamson attended the University of Wisconsin as well as the Central Washington College of Education at Ellensburg.

He started with General of the Northwest as a lineman at Coeur d'Alene in 1947 and one year later was promoted to an equipmentman's job at the same exchange. He was transferred to Wallace, Idaho, in 1950, and shortly thereafter went on a military leave of absence.

He returned to his former position at Wallace in 1951 and in 1953 was promoted to the position of chief equipmentman at Moscow, which he has held until now.

Gilbertson & Kiesling Form Utilities Accounting Firm

A. G. Kiesling, certified public accountant and telephone consultant, of Madison, Wis., has announced that Stanley E. Gilbertson, a certified public accountant, Arlington Heights, Ill., will be associated with him in the firm of Kiesling & Gilbertson, certified public accountants for utilities. Prior to joining Mr. Kiesling, Mr. Gilbertson was employed by Arthur Andersen & Company, Chicago, Ill., a national public accounting firm.

Since his graduation from the University of Wisconsin in 1947, where he majored in accounting, Mr. Gilbertson has specialized in accounting and related problems of public utilities.

For the past four years, he has worked in the public utility division of Arthur Andersen & Co. and has been engaged in accounting activities in connection with financing, regulatory and

S. E. GILBERTSON

auditing and system installation work for various telephone, electric and gas companies in the Middle West.

Prior to joining Arthur Andersen & Co., Mr. Gilbertson was employed by the General Telephone System in various capacities with the Wisconsin, Illinois and Pennsylvania companies.

His work as assistant secretary and treasurer of General Telephone Co. of Pennsylvania was interrupted by a recall to active duty in the United States Army during the Korean War. During this period he served on the General Staff at the Pentagon, Washington, D. C., where he received official commendation for his contributions to the supply and procurement activities of the Army.

Mr. Gilbertson graduated from the University of Wisconsin at Madison in 1947 after serving as an infantry officer in the European Theater during World War II.

Southern Bell T&T Makes Four Executive Appointments

Southern Bell Telephone & Telegraph Co. on Feb. 22 announced important organization changes involving four Atlanta officials effective Mar. 1.

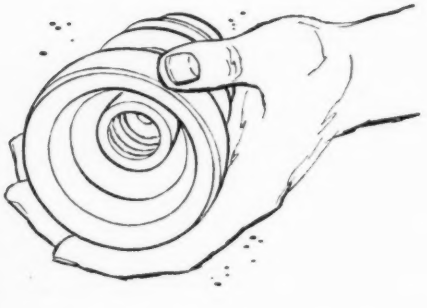
W. Kelly Mosley, Georgia commercial manager, was appointed assistant vice president-public relations, to succeed J. M. McAlister, who recently became assistant to president.

C. B. Smith, Georgia plant manager, was appointed plant operations engineer, to succeed C. T. McKinney, who has been named assistant vice president-personnel.

C. M. Eberhart, Atlanta district manager, will succeed Mr. Mosley as head of the commercial department in Georgia.

H. C. Caldwell, Atlanta district plant manager, will succeed Mr. Smith as

ACCURATE THREADS



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Armstrong GLASS INSULATORS
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head of the plant department in Georgia.

Mr. Mosley started with the company in Atlanta in 1924 and spent his early years in Atlanta, Nashville and Knoxville. Returning to Atlanta in 1944, he has served successively as general toll traffic supervisor, Atlanta district traffic manager, Atlanta district manager and Georgia commercial manager, directing commercial activities throughout the state. Mr. Mosley is an Auburn alumnus.

Mr. Smith began telephone work in Atlanta in 1921 and gained his early experience in Atlanta and in several Louisiana exchanges. He left Louisiana in 1942 and since then has served successively as Mobile district plant manager, Nashville district plant manager, Atlanta district plant manager, Louisiana plant manager and Georgia plant manager, directing plant activity throughout the latter two states. Mr. Smith is an alumnus of Wofford College.

Mr. Eberhart, beginning his telephone career, also in Atlanta, in 1929, filled various positions in that city until 1943, when he became manager at Albany. In 1948 he was appointed Athens district manager, and in 1949 became Augusta district manager. In January 1953 he was appointed Georgia information manager, and late that year became Atlanta district manager.

Mr. Caldwell started his telephone career in Birmingham in 1925 and filled various plant department assignments in Alabama for many years, including those of north Alabama district plant manager from 1941 to 1948 and middle Alabama district plant manager from 1948 to 1949. He was appointed Greenville, S. C., district plant manager in 1949 and came to Atlanta in the same capacity in 1953. He is an alumnus of Birmingham Southern College.

A. Bateman Named to Post With General of Illinois

Edgar H. Alms, Paxton division commercial superintendent for General Telephone Co. of Illinois, Springfield, has announced that Allen Bateman, West Frankfort, has been named district manager of the company's LeRoy group of exchanges.

Mr. Bateman succeeds Paul E. Wanstreet, who is being promoted to the position of commercial engineer in the company's general office in Springfield.

Mr. Bateman will also manage the exchanges of Arrowsmith, Bellflower, Carlock, Chenoa, Downs, Heyworth, Hudson, Lexington and Saybrook.

He was a West Frankfort exchange commercial assistant before being assigned to LeRoy.

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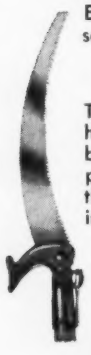
SEYMOUR SMITH
"Telephone" Tree Pruner

Here's the standard, the choice of the utility industry for years. Powerful action to cut cleanly — tough and almost unbreakable — easy to handle. No. 12 Pruner Head has 1½" cutting capacity. The lighter, No. 11, handles up to 1" branches. Both are malleable iron castings with tempered steel cutting blade.

Poles (18 ft. 3 sections) are of selected spruce with positive locking, seamless aluminum, telescoping ferrule joints.

FAST CUTTING PRUNING SAWS

Designed for fast, easy cutting—large, deep teeth, finest Swedish charcoal steel, streamlined, laminated hardwood handles. Every model you need up to chain saw work.



No. 20 POLE SAW HEAD

Tough aluminum head with large hook and outside horn for pushing branches, raising wires, etc. Also paint brush holder with wire clamp that holds brush securely. Fast-cuting 16" blade. Poles available.

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The Red Cross Helps You Help Others

THE PAST EIGHT months have been the costliest disaster period in the 75-year history of the American Red Cross. Some 27 million dollars — more than five times the amount Red Cross spends in the average year for disaster—has been used to aid victims of the eastern and California floods and of the Oklahoma-Kansas tornado.

Red Cross disaster funds have virtually been exhausted, and the next four months are normally the "disaster season" of tornadoes and floods.

Of the 27 million dollars spent for disaster aid since last July, a Red Cross spokesman reports, only 4 million dollars was actually budgeted for disaster expenditures while 16 million dollars was collected in special flood relief contributions following the eastern hurricanes last August and October and an additional 7 million dollars was drawn from emergency reserve disaster funds for the victims of the more recent floods in California and Oregon, leaving virtually no disaster funds on hand at the beginning of the annual season for tornadoes and floods.

The spokesman said Red Cross aided 41,066 families and small businesses affected by the eastern hurricanes and an estimated 10,000 families and small businesses affected by the western floods.

Not all disasters make headlines, the spokesman added. For example, in the Chicago area last year alone, he explained, Red Cross aided 2,116 disaster victims, providing 11,169 garments, 648 pairs of shoes, 307 days of shelter, and 7,043 meals. Most of them were fire victims.

The Chicago Chapter disaster preparedness and relief organization totals 639 trained volunteers, 291 of whom serve as chapter disaster representatives or alternates in their own communities on a 24-hour basis. In addition, there are 49 doctor-nurse teams trained, equipped, and ready 24 hours a day to give emergency medical and nursing care whenever and wherever needed. Canteen Service volunteers also stand by on a 24-hour basis, ready to prepare and serve food for victims if a major disaster should occur.

With 40 per cent of each contribution dollar earmarked for direct service to members of the Armed Forces, wherever they may be stationed throughout the world, Red Cross must continue to meet the needs of service men and women and their families in times of personal or family emergencies, as well as the needs of hospitalized veterans and disaster victims.

"Members of the Armed Forces and their families need Red Cross today as much as they did during wartime," he added, "and Red Cross must be prepared to assist them at all times. Nor have traditional Red Cross services to hospitalized veterans decreased any just because the shooting has stopped."

Red Cross also needs members and funds to continue its many *other* traditional services, including home nursing and safety training programs. The spokesman reports that last year Chicago Chapter staff and volunteer instructors trained 29,632 persons in first aid, 9,004 persons in home care of the sick, 6,515 persons in mother-baby care, and over 62,000 persons in water safety.

One of the major objectives of the Chicago Chapter is to extend its industrial first aid training program in 1955-56 to establish Volunteer Red Cross First Aid Detachments in *every* Chicago area industrial plant.

The Lengthening Shadow

"Nationalization of industry already has happened in many countries where Socialism had no greater foothold thirty years ago than it has in the United States today. The harshest criticism that can be made of American businessmen is that we have devoted so much time and energy to promoting the growth of our business that we have failed to do our duty by fighting against the changes in government which are slowly but surely threatening to strangle our initiative and energy."—WILLIARD F. ROCKWELL, *chairman of the board, Rockwell Mfg. Co.*

Learning From Experience

"Best men oft are moulded out of faults."—SHAKESPEARE.

SEVEN GET REA LOANS

Concluded from page 19

Alston D. Mugnier is president and manager of the Granby Telephone & Telegraph Co.

*

SCVAK Telephone Co., Big Spring, Tex., on Feb. 15 was allocated $63,000, revised first, and second loan.

The borrower proposes to use these funds, together with the first loan of $467,000, to provide facilities which will bring telephone service to 815 farm families and other rural residents in the area now without telephones. About 126 subscribers are now receiving magneto service from the company.

Present plans include new automatic central offices at Knott, Soash, Sparenburg and Vincent, and 337 miles of new line. The company has under consideration the acquisition of 20 miles of line from the Reef Fields Gasoline Corp. The company proposes to use 21 miles of the existing 44 miles in its expanded system, rebuild 11 miles and retire the remainder.

The completed system will consist of 369 miles of line in rural areas of Borden, Howard, Martin and Dawson counties.

W. D. Berry is president and manager of the SCVAK Telephone Co.

*

Cornersville (Tenn.) Telephone Co., Inc., on Feb. 16 was extended a loan of $181,000, first loan, to finance improvement and extension of rural telephone service in Marshall County.

The borrower is a commercial corporation which furnishes magneto service to 255 subscribers over 54 miles of line. It plans to convert the existing system to dial operation and add facilities to serve 245 more farm families and other rural subscribers now without telephones.

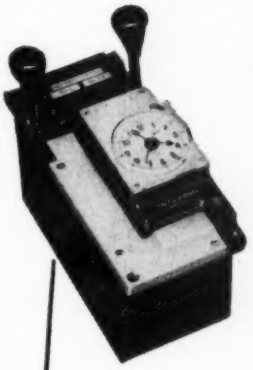
Present plans include a new automatic central office at Cornersville and 43 miles of new line. Fifty miles of the existing line will be rebuilt and 4 miles used in place in the expanded system.

M. R. Childress is president and manager of the Cornersville company.

The Tax Handicap

"Both this [capital gains] tax and the double tax on dividends interfere with the financing of new business—and it is only by financing of new business that employment can be given to our growing population. Economists are agreed that preferably capital for business should be 'equity' or 'risk' capital."—EDITORIAL STATEMENT, *Los Angeles Times.*

toll calls
TIMED TO THE SECOND
Automatically



This is the ultimate in modern, dependable and accurate computing of all toll calls TIMED TO THE SECOND. And what's more it's all done *automatically*—no need for operators to do it manually.

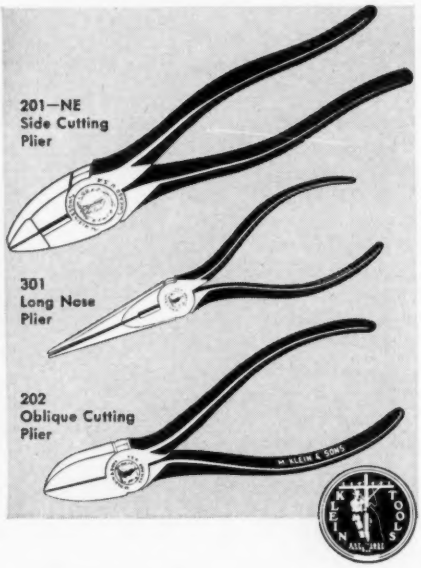
Just a flick of a lever, and Calculagraph computes, prints and records ELAPSED time of toll calls, thus eliminating human errors and allowing every operator to handle more calls—and more calls mean more dollars to you.

For time-saving operation, for dependable accuracy, for greater toll-call volume, install Calculagraphs on your switchboard. Investigate this model 33 shown here (others available according to need) and see for yourself what CALCULAGRAPH can do for you.
Don't delay, write today for catalog to Dept. T.

Photograph courtesy Lincoln (Neb.) Telephone and Telegraph Co. and Automatic Electric Sales Corp.

CALCULAGRAPH Company
HARRISON, N. J.
THE STANDARD OF ACCURACY SINCE 1892

KLEINS



Standard of the Industry for Nearly a Century

Ask the lineman on the pole . . . the electrician at the switchboard. They will tell you that the pliers they rely on are Kleins—every time.

Kleins have been serving the electrical industry since the first wires were strung and today have the same high quality, the same fine craftsmanship, the same individual inspection and testing that have won them their place for a century as first in pliers.

A wide variety of sizes and styles to meet any need . . . but only one quality—the highest.

ASK YOUR SUPPLIER

Foreign Distributor:
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New Plier Display

Speed up Klein Plier sales with this new display board. Write for price and full information.

Mathias KLEIN & Sons
Established 1857 — Chicago, Ill., U.S.A.
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Weston Names MacNamara Field Service Manager

The appointment of John D. MacNamara as field sales manager of Weston Electrical Instrument Corp. has been announced by W. H. Steinkamp, vice president in charge of sales.

Mr. MacNamara has spent the last 10 years in sales engineering and sales

J. D. MacNAMARA

management work in connection with industrial, laboratory and scientific instruments. Following his employment with General Electric Co. at Lynn, Mass., he became an industrial division sales engineer, and then industry sales manager, of Minneapolis-Honeywell Regulator Co. Prior to joining Weston he was industrial sales manager of Beckman Instruments Inc.

Mr. MacNamara is a graduate of Villanova University in mechanical engineering.

Wheelock Signals, Inc. Is New Name of N. Y. Company

Wheelock Signals, Inc., is the new name of Signal Engineering & Mfg. Co., makers of relays, fire alarm systems, audible signals, code call systems, and auxiliary equipment.

This change has been made to simplify the corporate name, the company explains. The change is in name only and the business will be continued as heretofore by the present personnel with the same ownership, products and policies which have characterized this company over the past 40 years.

The change of name follows on the footsteps of a recent move to larger and new plant facilities and offices at Long Branch, N. J. The company was previously located at 114 W. 14th St., New York City, where it occupied several floors.

The new plant of Wheelock Signals,

New "Lightweight"
PULLS ANY SIZE POLE EASIER!

Simplex ALUMINUM POLE JACK A-1538

35 LBS. LIGHTER — WEIGHS ONLY 60 LBS.

15-TON CAPACITY 22-IN. LIFT

The first time and labor saving improvement in pole jacking in 25 years! Aluminum housing saves 35 lbs. without sacrifice of strength or capacity. Pulls or straightens poles—pulls butts—moves loaded poles...without digging. Husky—to handle the toughest jobs. Same construction features as famous SIMPLEX No. 329 — the standard pole jack of the Bell Systems.

Simplex LEVER • SCREW • HYDRAULIC Jacks

Write for Descriptive Bulletin

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WITH THIS NEW POWERFUL MARKWELL TELEPHONE TACKER

YOU CAN STAPLE ALL YOUR J-K WIRE AND CABLE UP TO 16 STRANDS.

Only $11.95

SAVE OVER 50% IN MATERIAL AND LABOR.
MARKWELL *Free Service!*

Parts and labor no charge. Return postage paid to those buying MARKWELL Staples from us.

OTHER USES—Stapling Drop Wire, Metal Numerals, Signs, Screens, Building Repairs and Maintenance, Etc.

STAPLES PER PKG.—5,000

SIZE	8 per pkg.	15 per pkg.	30 per pkg.
L3B 5/16"	2.75	2.50	2.25
L3M 7/16"	2.90	2.75	2.50
L3D 9/16"	3.10	2.95	2.75

Sizes may be assorted for quantity price.
Further Discounts in Quantity Orders.

Also rust-proof and carbon steel available.

MARKWELL Manufacturing Co., Inc.
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Inc. at Long Branch provides increased space on one level for expanded manufacturing operations and improved facilities for engineering, research and development, and general sales offices. The area surrounding the plant provides ample parking space, as well as ready access to both shipping and receiving platforms for trucks.

U. S. Motors Corp. Appoints R. Schultz Western Manager

United States Motors Corp. of Oshkosh, Wis., announces the appointment of Robert L. Schultz as western regional manager.

Mr. Schultz will make his office in San Francisco, Cal., and have charge of United States Motors' operations in the Western States, Honolulu and

R. L. SCHULTZ

Alaska. His duties will include the establishment and training of distributors and dealers; the supervision of government and utility contacts; and technical liaison with architects and engineers.

Mr. Schultz is a graduate of Yale University and a member of the American Society of Mechanical Engineers. Prior to going to U. S. Motors Corp., Mr. Schultz was associated with RCA as district manager in the theatre equipment section of the engineering products division.

No Personal Funds

"One of the strangest notions that can pervade a people is that the state has money of its own—and nowhere, perhaps, is that notion more firmly fixed than in the United States. This is in face of the fact that it is very clearly evident to anyone who will just stop a moment and think that there is no such thing."—Cleveland (Miss.) *News-Enterprise.*

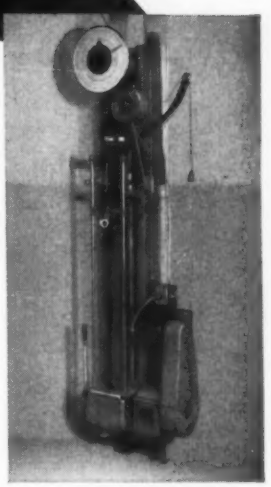
ADHESION TESTS SHOW THE CONDUCTOR BREAKS BEFORE LOWELL INSULATION SLIPS

No. 2 in a series of test results on LOWELL TELEPHONE DROP WIRE. "P Clamp" adhesion test.

The greatest strain on drop wire takes place at the "P Clamp" where the wire is attached to pole or house. The weight of ice and the whipping action of the wind develop extra strain at this point so that the best possible bond is essential, between the insulation and the conductor wire, to insure dependable service and long life.

To develop the strongest possible adhesion, all Lowell wires are brass flashed and special formulas have been evolved for insulation compounds. Lowell jacket compounds also have excellent resistance to abrasion and the ability to withstand the action of the elements under varying atmospheric conditions.

As a constant check, tensile tests are made at the Lowell Laboratories where the conductors are stretched to their breaking point before any slippage of the insulation or jackets takes place. These rigid laboratory tests are your assurance that Lowell Drop Wires will stand up under the most severe conditions and give dependable service without breakdown at this most critical point where the grip of the "P Clamp" must support the entire weight of the span. Year marker threads and manufacturer's identification permit user to keep accurate records of performance and long life in service.



Lowell Drop Wires are continually tested for adhesion of the insulation to the conductor. The conductor must break before the adhesion bond between the insulation and conductor is severed.

Write for Lowell Insulated Wire Catalog

"fine wires only"

LOWELL INSULATED WIRE COMPANY

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HTL-135
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● Efficient rural telephone circuits can be built at minimum overall cost where Crapo HTL-135 High-Tensile Line Wire is used to full advantage. For Crapo HTL-135 makes possible spans up to 350 feet in heavy, 540 feet in medium and 650 feet in light loading districts. Longer spans mean fewer pole structures with substantial savings in material and labor costs per mile.

The rugged tensile strength of Crapo HTL-135 and its heavy galvanized coating provide dependable and economical service life on typical rural lines.

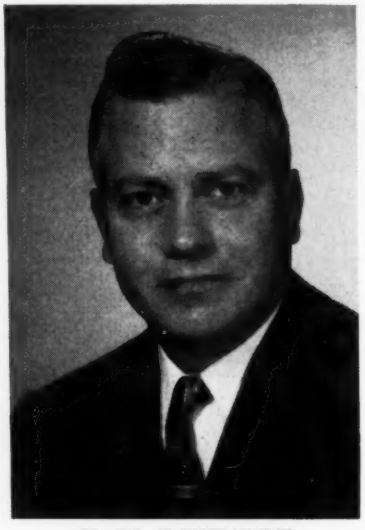
Ask your jobber for details or write direct for engineering data!

INDIANA
STEEL & WIRE COMPANY
Muncie, Indiana

Eckhardt Made Kellogg's Central Division Engineer

N. W. Eckhardt has been named central division engineer for the Kellogg Switchboard & Supply Co., a division of International Telephone & Telegraph Corp., according to an announcement by O. C. Bailey, assistant sales manager.

Mr. Eckhardt, well known in the telephone manufacturing business, has planned the conversion to dial service



N. W. ECKHARDT

for several telephone operating companies in the East and Middle West.

During World War II he had command of a signal company in the Marine Corps and rose to the rank of major. Following the war he became a telephone equipment engineer for the General Telephone Co. of Pennsylvania, where his duties included preparing plans and specifications for a number of cut-overs.

In 1952 he joined W. T. King, Inc., as a telephone engineer, where he was responsible for the preparation of plans and specifications for the conversion to automatic of the Mapleton, Mich., exchange of the Peninsula Telephone Co., and the complete new telephone plant at White Pine for the Ontonagon (Mich.) County Telephone Co.

ISE Elects John G. Copelin Vice President, Comptroller

John G. Copelin has been elected vice president, comptroller, and a director of International Standard Electric Corp., holding and management company for the foreign manufacturing and laboratory subsidiaries of International Telephone & Telegraph Corp., it was announced on Feb. 8 by Edmond H. Leavey, president of ISE.

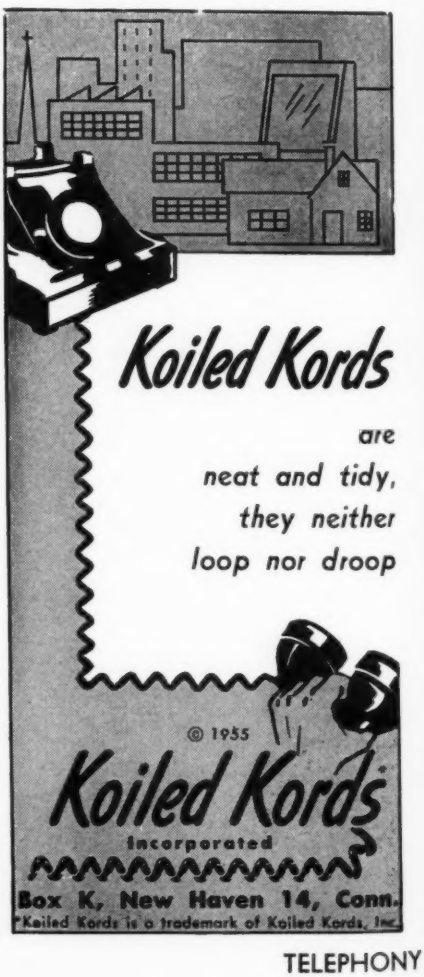
Mr. Copelin comes to ISE from Federal Telecommunication Laboratories, U. S. research division of IT&T, where he was vice president, comptroller, and

J. G. COPELIN

a member of the management advisory board.

Since joining the IT&T comptroller's department in 1928, he has had other important assignments with the corporation's manufacturing and operating companies. During World War II, he was on loan to Litton Engineering Laboratories of Redwood City, Cal., where he served as general manager for three years.

Mr. Copelin is a member of the



Controllers' Institute of America, the Armed Forces Communications & Electronics Association, and the American Ordnance Association.

W. G. Barney Named to Post At Kennecott Wire & Cable

The appointment of Walter G. Barney as vice president and assistant general manager of Kennecott Wire & Cable Co., has been announced by A. F. Sheldon, president. Kennecott Wire & Cable is a subsidiary of Kennecott Copper Corp.

Mr. Barney, who has served as purchasing agent, will continue to supervise the activities of the purchasing department along with his new duties.

Upon graduation from Brown University in 1936 he joined the Kennecott Wire & Cable Co. organization as a member of the production control department. During World War II he was supervisor of priorities for the company. He has had experience in both production and administrative capacities.

Active in the Purchasing Agents Association, Mr. Barney served as president of the Rhode Island Purchasing Agents Association, and at present is in charge of public relations for the New England district of the National Association of Purchasing Agents.

Back Words with Acts

". . . to commend my deeds, the deeds themselves . . . spoke loud the doer."—JOHN MILTON.

Dramatize the Presentation

"Knowledge must be adorned, it must have lustre as well as weight . . ."—LORD CHESTERFIELD.

"YOUR EXTENSION IS ALL SET."

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WITH EVERY QUALITY FEATURE FOR CONVENIENCE AND LONG SERVICE LIFE

It's true; Stahl TMI-76 Telephone Service Bodies have the extra costs engineered OUT. Here is a body that has all the space you want, a body that is reinforced at EVERY point of strain, precision welded of auto body steel, yet COSTS YOU LESS!

Available with Ladder Racks and Rear Bumpers, in prime finish or painted to your order.

MADE BY STAHL . . . BUILDER OF QUALITY SERVICE BODIES . . . mounted on your chassis at our plant, or crated and shipped to you at new low shipping cost.

Write for descriptive literature and complete specifications.

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KEARNEY Guy Wire Clips are available in six sizes of aluminum, galvanized iron and copper.

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Plan Stromberg Multiplexing For Canadian System

Multiplexing equipment for what will be the longest private commercial microwave communication system in Canada will be supplied by Stromberg-Carlson, a division of General Dynamics Corp.

The communication system is being built for the Quebec Hydro Electric Commission, one of Canada's largest electric utilities, by the RCA Victor Co., of Montreal. Arrangements for use of the Stromberg-Carlson multiplexing equipment in the system were made by Hackbusch Electronics Ltd., of Toronto.

Multiplexing is the process of "scrambling" a number of radio signals or messages, sending them simultaneously on the same channel, and "unscrambling" them at the receiving end. It can be applied to voice, teletype, telegraph, or any other type or combination of radio signals.

The multiplexing equipment for the Quebec utility's installation is now being built in Stromberg-Carlson's plant.

When completed, the system will extend more than 400 miles, from the commission's headquarters in Montreal to its two huge new power developments on the Bersimis River, near the Gulf of St. Lawrence. It will provide more than 30 circuits for voice communication, teletype, telemetering, and load frequency control, providing centralized control over nearly 2 million horsepower.

Through telemetering circuits all necessary information about the power being produced at the various generating stations, and the load at key points in the distribution system, will be indicated and recorded on meters in the commission's central control room. Thus the engineers can quickly make vital decisions on control of the power, and can use the generating and distributing systems most efficiently. Other circuits will provide control of the generating and distribution stations directly from the central control room.

The system will operate over a series of microwave radio relay towers. In addition to Montreal and the two Bersimis plants, other key points in the system will be Beauharnois, a 1½-million-horsepower plant some 30 miles from Montreal, and Charlesbourg, a large distribution station in the city of Quebec. At each relay point there will be equipment for radio communication with mobile patrol and service units in the area.

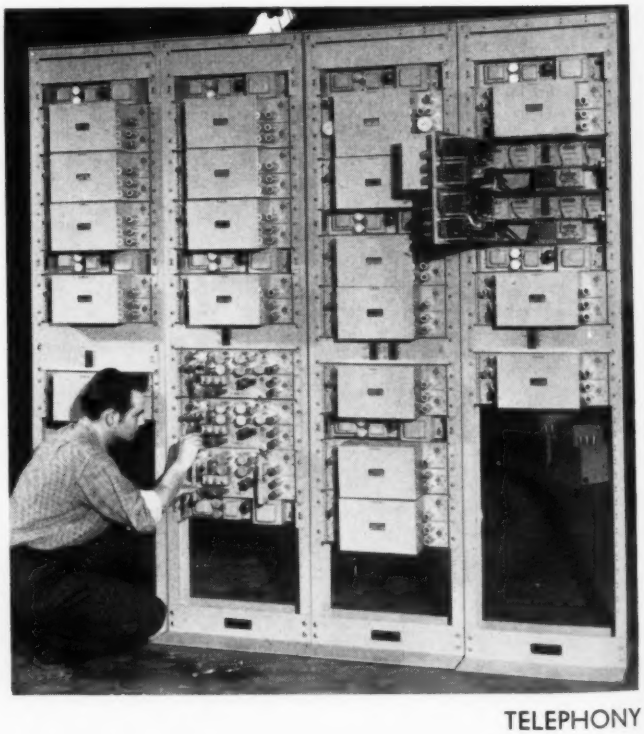
Michigan Company to Spend $300,000 on Dial Equipment

The Moore Telephone System, Inc., Caro, Mich., which serves the Caro and Marlette areas, plans to spend approximately $300,000 during the next year to provide dial service to Caro.

Work is already underway to improve facilities to handle new automatic equipment, A. J. Moore, company president, said on Feb. 17.

About 2,000 subscribers will have the dial service. In addition, six new long distance channels between Caro and the Michigan Bell Telephone Co. are being constructed, it was announced.

Saginaw is the toll center for Caro and Marlette.



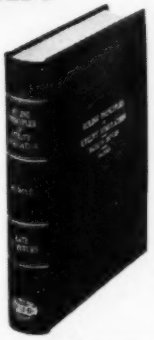
Four bays of multiplexing equipment for the Quebec Hydro Electric Commission's new microwave communication system are shown being assembled in the Stromberg-Carlson plant. When complete, the system will include 13 bays similar to those shown here. This multiplexing equipment makes it possible to send 30 messages or signals simultaneously over a single microwave radio channel.

Ruling Principles of Utility Regulation

RATE OF RETURN

by Ellsworth Nichols

–the book you've been waiting for



500 pages
$15.00

One of the most important subjects, if not the ***most important subject***, constantly confronting utility managements, regulatory commissions and others concerned, is the ***amount of return*** to be ***allowed public utility companies*** and ***how best*** to ***determine that return.*** After almost four years of research, study, and analysis, Ellsworth Nichols, Editor of PUBLIC UTILITIES REPORTS and author of other publications on regulation, has completed his new volume ***"RATE OF RETURN."***

Published by Public Utilities Reports, Inc. *and kept up-to-date by periodic pocket supplements.*

Throughout the work, emphasis is placed on the ***ruling principles of courts and commissions*** concerning the ***various factors to be considered, the weight to be accorded such factors,*** and ***illustrations*** of the ***application*** of the ***principles discussed.***

The volume contains 25 chapters, each dealing with an important phase of the subject.

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Architect Frank Lloyd Wright (center) discusses preliminary plans for the Lenkurt Electric Co.'s proposed new administration and engineering building in San Carlos, Cal., with President L. G. Erickson (right) and Executive Vice President Kurt E. Appert. The famous architect will design a 90,000-square-foot building for Lenkurt.

Lenkurt Reports Plans for New Administration Building

Lenkurt Electric Co. of San Carlos, Cal., has retained noted architect Frank Lloyd Wright to design a new administration and engineering building for the firm.

The building will have about 90,000 square feet of floor space and will be constructed near the present Lenkurt headquarters plant, which is located on a 55-acre plot in San Carlos, 25 miles south of San Francisco.

President L. G. Erickson said the planning for the project will include a "master plan" for any future expansion of the company's manufacturing operations.

"The timetable for construction of the building is not definite yet," Mr. Erickson said. "Mr. Wright is already working on preliminary sketches, but it will be several months before plans are complete and we are ready to proceed."

Offices and engineering development laboratories that will go into the new building now occupy about one-third of the company's present 173,000 square feet of floor space. In addition to its operation in California, the electronics firm has a Canadian affiliate which is just completing a new office and manufacturing building in Burnaby, British Columbia.

Lenkurt specializes in the design and production of carrier equipment and microwave systems for telephony. The company is a major supplier of multichannel communications systems to telephone companies, railroads, power companies, government agencies, pipelines and other industrial firms.

Stromberg Establishes Two Engineering Scholarships

Establishment of a program under which two scholarships for college education in engineering or science will be given yearly to sons of employes was announced recently by Robert C. Tait, president of Stromberg-Carlson, a division of General Dynamics Corp.

The scholarships will pay full tuition for up to five years at any recognized institution, and the scholarship holders also will receive $250 yearly to help defray other costs. In addition, if the scholarship holder attends a privately endowed institution, the company will make an unrestricted gift to that institution, recognizing that tuition fees represent only a portion of the cost of education of each student, Mr. Tait said.

For the 1956-57 academic year, applications will be accepted from students already in college, as well as from high school seniors or graduates preparing to enter college next fall.

To be eligible for a Stromberg-Carlson scholarship, an applicant must be the son or stepson of a regular employe who has completed at least five years of service with Stromberg-Carlson, who is employed by the company at the time the scholarship is awarded, and whose base salary does not exceed $10,000 per year.

Two scholarships will be awarded each year for the study of engineering or an allied science at an accredited college or university offering a standard course of study leading to a bachelor's degree. Scholarship winners will be required to maintain acceptable academic standards, and will not be permitted to accept financial aid from other sources except their families.

The scholarship program will be administered by Lynn C. Holmes, director of research of Stromberg-Carlson. Applications and transcripts of preparatory school records must be filed with him no later than Mar. 19. Winners will be announced in May.

RARE GAS RELAY KILLS INTERFERENCE!

OVER 1/4 MILLION IN USE!

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HERE ARE THE FEATURES:

1. Ends all objectionable noise.
2. Prohibits false ringing.
3. Easily installed in all types of equipment.
4. Lightning protection.
5. Non-mechanical, no maintenance.
6. May be used with harmonic or coded bells.
7. May be used on magneto or common battery lines.

$3.62
LIST PRICE

THE THEORY OF OPERATION —

Since the resistance of the relay is infinity below 60 volts, (The relay's normal breakdown voltage) the line remains normally free from paths to ground. Ringing voltages of over 60 volts ionizes the rare inert gases, and therefore is transmitted without difficulty.

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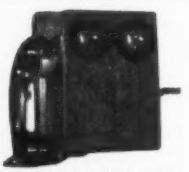

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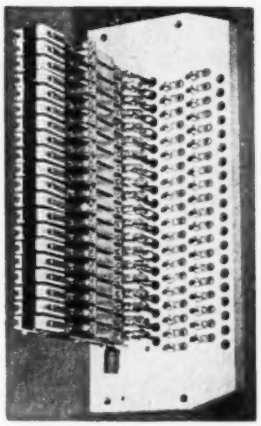

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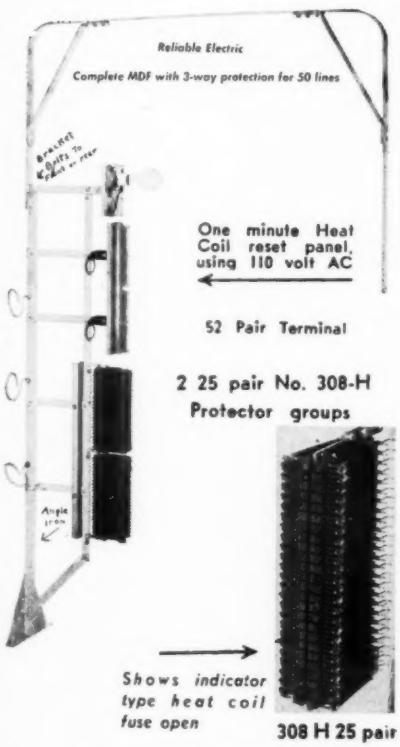
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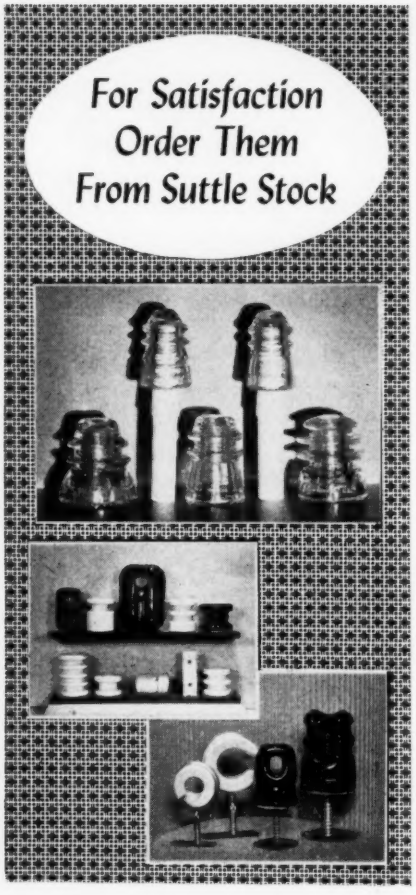

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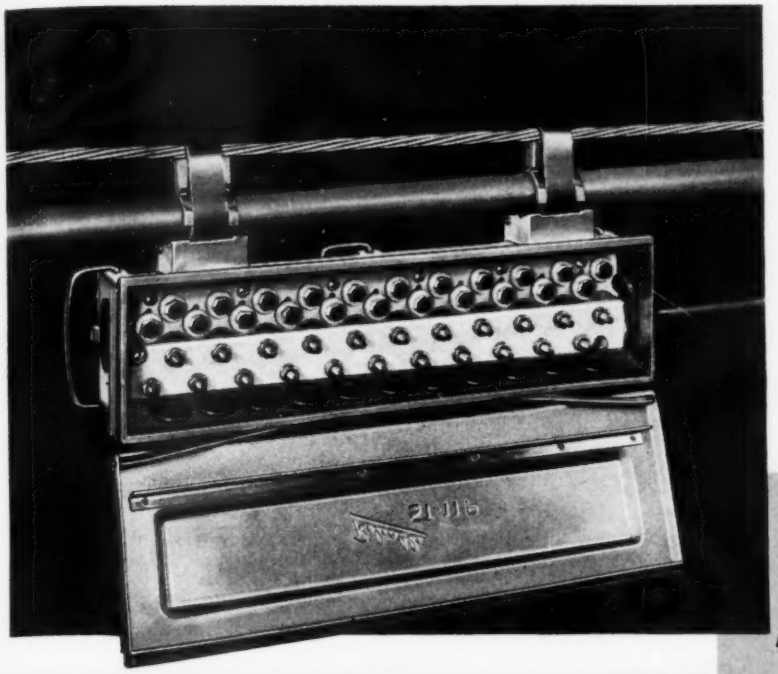

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